THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. 85. NEW YORK, SATURDAY, OCTOBER 1, 1904. No. 14.

ORIGINAL ARTICLES.

A CASE OF TUMOR OF THE SPINAL CORD.

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CASES of spinal-cord tumor diagnosed, localized and operated upon are of sufficient interest to justify the report of the following case of tumor in the cervical region, successfully diagnosed, localized, and operated upon:

Mrs. S., aged thirty-four years, was referred to me for operation by Dr. Joseph Fraenkel, of this city, to whom I am indebted for the following history as well as for the accurate diagnosis and localization: In September, 1901, a fall into a ditch caused a bruise of the left hip and ankle. On October 23, 1901, she noticed that jolting in the cars caused pain in the left shoulder, at first dull and not very severe. This increased in severity and extended to the other shoulder, with pain in the back of the neck joining the two painful areas. It became shooting, and extended to the chest in knife-like radiations. In November, 1902, weakness of the left upper extremity was noticed in piano-playing, and simultaneously a band-like sensation was felt around the upper abdomen, most marked when she wanted to get up. Soon afterward there was weakness of the left lower extremity. Later, sensation on the right side was impaired. Sphincteric difficulties, not amounting to actual incontinence, have been present for the past month.

On examination in the latter part of January, 1903, the following points were noted: (1) Pain across shoulders and back of neck, slight all the time, worse in the morning and when sitting up without support. No severe shooting pains for the past month. (2) A girdle sensation across the upper abdomen, getting worse. (3) Tingling in hands, like electricity, more marked in left. (4) Difficult motion of the left upper and lower extremities. (5) She is most comfortable lying on the left side; contractions are worse on the right side. (6) Left fingers and toes straighten out and draw up painfully when she tries to sit up.

Furthermore, there is atrophic and flaccid paralysis of the left upper extremity, most marked in the triceps and extensors; spastic paralysis of the left lower extremity, with exaggerated knee-jerk and the presence of ankle clonus and Babinski phenomenon; and a spasmodic stretching of left hand and foot on change of posture.

As to the sensory symptoms, there is paresthesia of the right toes and dissociated sensory disturbances of the right side up to about the fifth thoracic vertebra. At this height and at about the sixth cervical vertebra there is a small band of hyperesthesia. The pain is worse at night. There is sweating of the face, especially at night. There is some tenderness, especially on left lateral pressure, over the fourth thoracic vertebra. The movement of the head backward gives pain in the back of the neck. The deep sensibility is lost in the left upper extremity.

On February 1, 1903, it was observed that the sensation of the left upper extremity (ulnar side) was not very acute, that the temperature sense was disturbed on both sides of the trunk, and that the muscles of the left hand reacted sluggishly to faradic stimulation.

The diagnosis of a tumor within the vertebral canal was made. There was some difference of opinion among those who had seen the patient as to its relation to the cord and membranes. It was thought probable by most that it was extradural, though an intramedullary situation had been suggested by one neurologist. The tumor was localized at the sixth cervical segment.

She was admitted to the Presbyterian Hospital on February 1, 1903, in the condition described above, except that with the progress of the paralysis she was even more helpless, and could not walk, stand, or raise herself up.

Operation.—Cervical laminectomy was done on February 2, under ether anesthesia, with the patient in a prone Sim's position. Median incision from 1½ inch below the external occipital protuberance to the first thoracic spine, deepened to spines of vertebræ, from which and the laminæ the deep tissues and periosteum were reflected by the elevator and knife. The hemorrhage was but moderate and easily controlled by pressure and hot-salt solution on one side, while the opposite side was being reflected. The spines of the fourth to seventh (inclusive) cervical vertebræ were removed by bone-cutting forceps, and the corresponding laminæ by the rongeur, piecemeal. Nothing appeared outside the dura, hence the latter was incised in the median line. The troublesome flow of cerebrospinal fluid from the cranial side of the opening was checked by inserting a small strip of gauze between the dura and the cord. The probe encountered no resistance except on the left side and anteriorly in the region of the sixth cervical lamina. Here the cord bulged backward considerably, and on pressing it to the right a dark bluish prominent area was seen on the left side, extending anteriorly. As this lay in front of the posterior nerve-roots, two of the latter overlying it were cut central to the root ganglia to get at the tumor. The latter was easily distinguished from the cord by its darker

color and harder consistence, and appeared to be covered by a capsule continuous with the pia, which was incised along the curved line where the tumor and the cord adjoined. The tumor, which was also adherent to the inner surface of the dura, was then fairly easily removed entire by blunt dissection, chiefly by the finger. It measured 2 cm. in length, 1¾ cm. in width, and 1¼ cm. in thickness, and was opposite the sixth cervical lamina, overlapping that of the seventh. The dura was sutured with fine gut and the deep parts were brought together by interrupted sutures of heavy gut, a small cigarette drain being introduced at the lower angle as far as the dura.

The patient continued in excellent condition throughout the operation, but on coming out of ether the paralysis was more marked than before, especially on the left side, and for some time after the operation she complained of paresthesia, especially prickling, which was most troublesome in the upper extremities. Profuse perspiration of the head was also very annoying.

The wound healed *per primam*, and it was two weeks or more before any marked improvement was noticed. This consisted in the return of motion, first in the right and then in the left leg. The left arm improved but slightly and slowly. For the first two weeks there was more or less incontinence. When she left for home, six weeks after the operation, sensation was about as before, except that the girdle sensation was not present. Considerable improvement occurred in motion. There was spasticity of both lower extremities.

A month later she was sitting up, could get out of a chair without assistance and walked with a spastic, paretic gait. Considerable paresis of the triceps and the extensors and flexors of the left wrist remained. There was loss of deep sensibility and of the stereognostic sense in the left hand. The paresthesia was but slight. Four months after the operation she walked without assistance with a spastic gait. Disturbances of sensation were less marked. Seven months after the operation the motion in the left upper extremity had also improved considerably. She has continued to improve still further.

Dr. Ewing pronounced the tumor to be an endothelioma.

This case in point of locality, in the cervical region, belongs to the rarest class of spinal-cord tumors. In the series of operated cases collected by Starr, Bruns, Putnam, and others, only one was located in the cervical region. Three such cases have been more recently reported by Oppenheim and Sonnenburg,[1] Henschen and Lennander,[2] Putnam, Krauss and Park.[3] In the above series also the operations on extradural tumors have far outnumbered those on intradural ones, although in fourteen cases recently reported the intradural have far outnumbered the extradural. The former most often allow of an exact diagnosis, and hence a good result from an operation. Hahn,[4] in 1902, reported the ratio of intradural to extradural tumors to be two to one.

In this report it is unnecessary to fully discuss the question of diagnosis, which depends upon a regular and oftentimes slow development that shows itself in an orderly sequence of symptoms due to pressure. The tumors are, as a rule, situated laterally, or laterally and posteriorly, and the pressure is usually first shown in the posterior nerve-roots as vague and then localized neuralgic pains, at first on one side, then on both, finally giving place to diminished sensation when the nerve-roots are destroyed. The symptoms of pressure on the cord itself may not occur until after a long interval (several years), and consist of (1) motor weakness beginning below the extending upward, at first on the side of the tumor, paraplegia only developing later. Then (2) diminution of sensation of all kinds but in different degrees occurs, advancing from below upward and being most pronounced on the side opposite the tumor. Thus Brown-Séquard's paralysis is not infrequently observed in these cases. At the upper border of the hypesthesia there is hyperesthesia in a small circular zone or in spots.

The question of segment diagnosis is of the greatest importance and interest, for on this depends the resort to operative removal. The upper limit of the tumor is the most important to locate, as it has been a common experience since Horsley's first case to find the tumor higher than it was diagnosed. To determine this limit, and the segment or segments involved by the pressure, we have both the motor and sensory symptoms. The sensory are more important than the motor symptoms for this purpose, and those of sensory paralysis (anesthesia, etc.) than those of sensory irritation. In this connection it is important to observe that, according to Sherrington's experiments, each nerve-root is intimately connected with those above and below, and, owing to this and the numerous anastomoses between the nerve-trunks, no one muscle or area of skin is supplied by a single root or segment, but in addition by the segment or root above and below, so that the tumor may be placed two segments higher than the symptoms. Hence Bruns says the operation should be done two segments above the upper level of pain, and, according to Starr, the cord should be exposed four inches higher than the level of the spinal nerve in which the pain is found. Furthermore, the afferent and efferent tracts run in the substance of the cord for some distance, possibly the distance of two segments, before they reach the nerve-center in the gray matter. This fact may further increase the ease of mistakes in locating a tumor lower than it really is.

Jaffe,[6] in reporting an autopsied case, found that the tumor was in the spinal segment which governed the upper limit of the area of diminished sensation or the transition from the diminished to the normal sensation, supplied by the anastomoses of the intact roots above.

Schede,[6] in reporting four cases operated upon, states that the upper end of the tumor was regu-

larly found in the segment which represented the upper border of the disturbance of sensation.

The diagnosis of the nature of the tumor is more difficult than its position. Sarcomata are the most common variety, forming forty-five per cent. according to Bruns's statistics, forty-two per cent. according to Putnam's and Warren's. Extradural growths are more apt to be malignant than intradural. Those progressing rapidly are probably malignant. But in the case of any tumor within the spinal cord, as within the cranial cavity, the prognosis is necessarily fatal if the tumor is left to itself.

Laminectomy in itself is not a very serious operation, and according to McCosh the operative mortality should not be over ten per cent. The fact that resort to operation has generally been delayed too long, until the cord is seriously compromised, bed-sores or cystitis have developed, and the general condition has greatly deteriorated, is responsible for the high mortality. Bruns gives thirty per cent. of recoveries, Krause 56.3 per cent., and in the last twelve cases operated on seventy-five per cent. The prognosis is worse the higher the tumor is situated. Spinal tumors are more often removable than cerebral ones. According to Starr,[7] out of 122 cases the operation should have been feasible in 76, and from pathological reports the tumor could have been removed in seventy-five per cent. Thus these tumors are far more accessible than cerebral tumors.

In considering the *operative treatment* it is well to repeat the statement of Starr and McCosh, that although compression from a tumor of the cord may exist for a long time without softening, no delay should be made for antisyphilitic treatment, for gummata of the cord are rare and the results of delay may be most unfavorable.

As it is, strictly speaking, impossible to assign a certain lesion to a definite segment, but only to an area within three segments, hence, given the highest segment of the cord opposite which the tumor may be situated, we expose this by removing the neural arches of not less than three vertebræ, and any slight inaccuracy of localization may be counterbalanced by the length of the area of the cord exposed. At least this much has to be exposed for the proper manipulations in the removal of the tumor. For operative purposes the surgeon must know the relations of the segments to the vertebræ and really to the spines of the vertebræ, for these are our only superficial landmarks, and in the cervical region even these fail us. These relations of the cord segments to the vertebral spines are given in various tables with a fair degree of accuracy, though if the considerations already given do not suffice to explain the frequency of the tumor being found higher than located, some inaccuracy in these tables or even an individual difference may account for it.

As to the technic, even in the deep wound in the cervical region hemorrhage was not serious and was easily controlled. It is a matter of individual preference what one uses for the removal of the laminæ. Cutting forceps for the spines and rongeur forceps for the laminæ I have found effective. Schede recommends the Gigli saw in the cervical region to divide the laminæ. Uhtoff's osteoplastic resection is to be condemned. It prolongs and complicates the operation, and the laminæ and spines do not serve to carry any of the weight. Hence no support is necessary after the operation.

Sonnenberg[1] has reported one case of a tumor in the cervical region of the cord in which he attributed the fatal result to the use of this method of temporary resection.

The flow of cerebrospinal fluid may be a great inconvenience in the removal of the tumor. In my case, a little sterile gauze inserted behind the cord between it and the dura at the upper or cephalic end of the incision checked this flow very satisfactorily. For the same purpose Schede has used the circular constriction of the dural sac above and below the incision by a silk or elastic ligature, as proposed by Sick.

The tumor is usually readily shelled out by blunt dissection. In the above case two posterior nerve-roots had to be divided to get at it.

The improvement, as in the case reported, may not commence until two weeks or more after the operation. It appears first and is most complete on the side where the symptoms last appeared. The symptoms continue to improve for a considerable time, but some permanent effects of the pressure may persist from destruction of the cord on the side of the tumor, depending on the size of the tumor and the length of time it has exerted pressure. For this reason alone it cannot be too strongly urged that suitable cases of tumor of the spinal cord be operated upon as soon as it is possible to localize them.

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THE NEED OF EFFICIENT PUBLIC HEALTH WORK IN THE SUBURBS.[1]

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Before attempting to form an idea of the need of public health work in the suburban districts of New York it may be well to picture to ourselves the principal types of suburbs, and agree upon some of the leading features of suburban life which make a strict surveillance of public health there desirable.

The word "suburban" carries to some minds a pleasing picture of quiet country homes in pretty villages within easy reach of the city. The streets are smoothly paved, and shaded in summer, and there are lawns about the houses which give an

1 Abstract of a paper read before the Municipal Club of Brooklyn, N. Y.

air of ease and order to the place. Many of the dwellings are admirably built for the admission of light and air and relatively high standards of hygiene prevail within them. There are about forty towns and villages of this kind within a half hour's journey of Manhattan.

Notwithstanding the orderly and agreeable appearance of many of the environs of this type, the machinery for guarding public health in them is not always highly developed. The members of the boards of health usually serve without pay. The boards are often made up of men not one of whom has had any training in public health work.

It is for this reason that many suburban towns are not provided with as perfect sanitary arrangements as they should have. Water supplies and sewerage systems are occasionally defective. It is unusual to find the milk supplies well regulated. Disinfection and isolation for the prevention of contagious diseases rarely receives scientific attention. Hospital accommodations adequate to the needs of the population are seldom provided. The most important detail of all public health work, the registration of cases of infectious diseases, births, marriages and deaths, is often so much neglected that it is impossible to tell from the records whether the community is enjoying its proper share of health.

In some suburbs an attempt is made to attend to public health work in a modern way, but the annual reports of the majority show that there is much halfheartedness and lack of skill in the effort. The suburbs in which thoroughly competent public health work is performed are conspicuously few.

Yet a wise and competent administration of public health matters is much needed in residence suburbs. Many are, in reality, health resorts. People live in them for the rest and healthfulness which they are supposed to afford.

If there was no other reason why a strict surveillance of public health were required the fact that most of these residence communities are growing rapidly would afford one. It is as true with respect to communities as it is with individuals, that the period of growth and adolescence is a period of unusual danger to health. Our residence villages and towns are always outgrowing their sanitary arrangements. For example, the sewer which was big enough for a population of five thousand a dozen years ago is inadequate for seven thousand who need to use it to-day.

To some the word suburb does not call to mind an attractive picture. It is remembered that between the beautiful residence suburbs and the city lies a district which is anything but pleasant: where the built-up sections end and the country farms begin. It is a region largely given over to what are called by public health authorities the "offensive trades," and the city on the other hand, and the country on the other, seem bent upon making it as offensive as possible. Here are slaughter houses, oil yards, fertilizer plants, chemical works and dumping places for the miscellaneous filth of the city.

The location of offensive trades in the suburbs is a relic of the times when civilization knew little about sanitary science. In those days the pollution of the atmosphere with foul odors was considered inevitable. To-day we know that these odors may be largely prevented and that it is often business economy to do so.

Such dwellings as exist on the outskirts of the city are the homes of poor people. The houses consist of meanly-built frame structures, packed on small lots and surrounded by barren wastes. Public works for the development of the city have left sunken lots on every hand. Some of the depressions are filled with green, slimy water. Here mosquitoes breed and carry malaria.

Life, as seen at the edges of the city, is often as squalid as anything to be found in the most overcrowded tenements. In fact, existence here is sometimes less healthful than life in the giant tenements in town. The dwellers in the tenements have at least the benefits of a public water supply, a sewerage system and some share of board of health control, while the people on the outskirts of the city are apt to be left to shift for themselves. Inside, the houses are often filthy, unventilated and overcrowded. Outside, the back yards contain all the sanitary conveniences which the people think they need. Here is a well and a privy; here are thrown ashes and garbage and house slops. Chickens, goats, etc., are the scavengers.

Between the immediate squalid outskirts and the pleasing residence suburbs of the city lies a large tract of country which is being gradually transformed. The city has extended its streets and avenues partly through these districts, but sewers and water works are not yet built and board of health work is unknown. The progress of municipal improvements has not been an unqualified advantage. On every hand the natural drainage of the land has been interfered with. Acres of sunken lots are to be seen and acres of stagnant water. Years must pass before these lands are reclaimed by their owners. Meanwhile the region is fairly certain to gain an evil reputation for malaria. Malaria is indeed a common disease of most suburbs.

A favorite occupation in this class of suburb is the business of keping cows for milk. In the vicinity of New York are many so-called dairies filled with cows which are imprisoned in their stables the year round. Few people who see in our city or suburban streets immaculately painted milk wagons bearing such legends as "Sweet Clover Farm" or "Brookside Dairy," for instance, have any idea of the filth and squalor from which many of these wagons draw their supplies. How many people take the trouble to learn where their milk comes from, and what pains are taken to keep it pure?

Having made a brief survey of some of the conditions which render strict attention to public

health matters desirable in the suburbs, we are in a position to group under a few general heads the difficulties in the way of protecting health and point out the remedy.

First in importance among the difficulties I should place the want of knowledge which everywhere exists on the subject of hygiene. In the better residence suburbs we have seen that public sanitary questions are often neglected. In the squalid outskirts of the city private and domestic hygiene are practically unknown. Hygiene is a neglected factor in education, as has been pointed out by President Eliot, of Harvard. Children, as a rule, do not study it at school, and in later life seldom acquire any knowledge of it beyond that gained by costly observation and experience.

Nor are our doctors always qualified to act as expert advisers with respect to public health measures. Few physicians have studied hygiene and fewer yet of forty years of age or more could have studied its foundation science, bacteriology, in their college courses, for it has not so long been taught.

Second in importance as an obstacle to protecting public health, I should place the difficulty of enforcing sanitary laws. If the suburb is not a part of the city the authority of the health board is apt to be inadequately understood by the board itself, as well as by the public. The authority of the health board is in reality very great. No more power is given by the statutes to any department of local government than is conferred upon boards of health for the proper discharge of their duties.

Thirdly, a want of concerted action among different departments of the local government accounts for some of the difficulties in the way of protecting public health in the suburbs. There is not infrequently a tendency for each bureau to pursue its labors without regard to the activities of the rest, and this often leads to difficulty. For example, it is incongruous for a department of health to declare that the private dumping of garbage or swill is a nuisance, if at the same time city scavengers are permitted to tip their refuse in sunken lots.

A remedy is available for the difficulties of caring for public health in the suburbs. Be they aristocratic villages or mere squalid outposts of the city, energy is needed to discover and correct the sanitary conditions. Get all the help possible!

Health authorities are often embarrassed by the small number of paid employees under their direction, but they generally receive an important amount of assistance which is not paid for. All physicians are called upon by law to supply information concerning sickness, deaths and births for the information of the health department. In a similar way ministers are required to report marriages. Citizens who are annoyed by unsanitary conditions in their neighborhood, commonly lodge complaints.

Extend this cooperation. Let the character and amount of the assistance be increased; let the personnel of the boards of health be improved; let the appropriations for the maintenance of the boards be adequate; establish laboratories to test water and milk; inspect the dairies and the water shed. Above all, engage a competent health officer to execute the orders of the board.

See to it that the suburb is healthful and that the public has the reasons for knowing it to be so. Publish a monthly report and state the facts with regard to the prevalence of preventable diseases, if they are prevalent.

A policy of indifference or a disposition to hide the facts may be fatal. It has often led to a great epidemic.

As soon as possible, see to it that that universal nuisance, the garbage question, is solved in a sane and sanitary manner. As certainly as garbage and ashes must be disposed of there is an orderly and inoffensive way to dispose of them. There is absolutely no warrant for polluting the air and making a suburb or any part thereof a disgusting dumping place for refuse.

Begin to collect a library on sanitary topics. Whether you are a member of the board of health or not, it is important that you should know when and where cases of transmissible sickness are likely to occur, how infectious diseases may be communicated and how they may be prevented. It is desirable that the principles of disinfection, isolation, bacterial cleanliness and domestic hygiene should be generally known and applied. The members of the board of health ought to be experts in these matters.

Efficient work on the part of the board of health will be certain to bring a rich reward. Life and health will be more secure. The suburb will be cleaner morally. Higher standards of municipal order will prevail. Not the least reward will be the business advantage which will come from the prosecution of a strict and skilful public health campaign. Intelligent people will be attracted to the suburb. From a purely mercenary standpoint health work pays.

A CONTRIBUTION TO CYTODIAGNOSIS IN PLEURAL EFFUSIONS, WITH ESPECIAL REFERENCE TO THE TUBERCULOUS FORM.

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Cytodiagnosis of pleural effusions is a subject which, until very recently, has been entirely ignored, although the cells of the blood, and those found in exudates from some other portions of the body, have long been studied and discussed. The extreme importance, to the patient, of a positive diagnosis in suspected tuberculosis anywhere, can scarcely be overestimated, and, as a rule, the earlier diagnosis the more favorable the result; hence, when a patient with a pleural effusion is presented, a practically positive diagnosis of its etiology, *i.e.*, whether tuberculous or

not, offers the best chance for the individual's proper care.

To emphasize this the more, according to Cabot[1] fifteen per cent. of 152 cases of pleurisy with effusion developed demonstrable tuberculosis of lung or bone, in three per cent. of which the tuberculosis manifested itself within two years of the date of the effusion. Since he used no positive method for determining which were tuberculous and which were non-tuberculous, undoubtedly a considerable number of the latter were included among the observations, so that, proportionately, the number of cases which developed tuberculosis would probably be considerably greater had the non-tuberculous cases been positively excluded from the series.

Widal and Ravant[2] were the first to call attention to a lymphocytosis in the so-called idiopathic pleurisies, but their conclusions, so far as the establishment of a positive diagnosis of their tuberculous origin, are incomplete, as they took into account only the differential cell count, while as a matter of fact a more complete morphological examination of the effusion is necessary; and there are other diagnostic points, without which one cannot make a diagnosis of tuberculous pleurisy, especially the *specific gravity, fibrin,* and *albumin content,* all of which are of extreme importance. There are many cases in which the lymphocytes predominate, although they are in nowise tuberculous, as shown by Series D.

Reasoning also by analogy, Hand[3] found that he was able to demonstrate tubercle bacilli in the spinal fluid from cases of tuberculous meningitis, in practically every case. In these he also found a lymphocytosis, but in addition an albumin content as high as nine per cent., whereas the normal spinal fluid contains but about five-tenths per cent. and that of the ordinary meningitis four to five per cent.

The fluid from two cases of proven tuberculous peritonitis was also examined and showed a lymphocytosis, one of 98.6 per cent., another of ninety-nine per cent., each with high fibrin and albumin percentages.

Runeberg[4] long ago demonstrated the great difference in the albumin content of exudates and transudates, the latter having but a small percentage as compared with the former; while it is a matter of common experience that the specific gravity of exudates exceeds that of transudates, so that one can almost positively state that a pleural fluid with a specific gravity over 1010 or 1012 is exudative, while that below is the result of transudation. Hence it is only by a combination of morphological data that we are able to arrive at a practically positive diagnosis of tuberculous pleurisy, without animal inoculations, and that this can be done with what seems reasonable certainty, is the object of these observations.

Animal injections are, above all, too slow, and much valuable time is lost to the patient in waiting for results, three weeks being about the shortest time in which tubercles may be demonstrated, and then not with certainty, while guinea-pigs survive injections of tuberculous pleural fluid two or three months, when one often finds the tubercles well developed and cheesy. Taken in connection with the difficulties of the process and the failures, it is too uncertain to ever become generally useful, while a morphological examination can be easily and rapidly made and the results, for the various forms of pleural effusion, are nearly uniformly constant.

The advantage, too, of differentiating *statim* the exudates due to tubercle bacilli and pneumococci by this morphological examination is evident, for the majority of cases of each begin in much the same way, chill, pain in the side, and a high temperature, often 103° to 104° F., and when one has to go entirely by the history it is often quite impossible to say whether the patient has had an initial pneumonia with subsequent fluid, or whether it has been acute tuberculous pleurisy from the start, *e.g.,* Series B, Case XIV. Many samples of fluid came marked with a clinical diagnosis which proved on further examination to be wrong.

By reference to the tabulated cases one can see that only three of the positively tuberculous, and two of the probably tuberculous cases were at all subject to rheumatism, and it is to be doubted if the rheumatic poison ever gives a true pleural effusion, although this is a time-honored theory, and there is nothing theoretically against such a possibility, Dopter[5] going so far as to describe the characteristics of rheumatic pleurisy; but Wolf[6] says that what were previously described as such are now known to be tuberculous, in all probability; and certainly this series of cases seems to bear out that statement most emphatically.

True cases of septic pleurisies (empyemata) are of no interest from a cytodiagnostic point of view, for, like all pus, the polymorphonuclears predominate almost to the exclusion of all other forms, and the etiological diagnosis can, so far as we know, be made only by cultures.

METHOD OF MORPHOLOGICAL EXAMINATION OF PLEURAL FLUIDS.

Fluids should be examined as promptly after aspiration as possible, immediately after, while still warm, and before the fibrin clot forms, if animal inoculations are to be made; for judging from Hand's experience with spinal fluids, the tubercle bacilli, or their spores, are entangled in the fibrin, as he was able to find bacilli, in his cases, only in it and never in the fluid, no matter how treated. The color, turbidity, specific gravity, reaction, and relative albumin content are then obtained. The latter is quickly done by adding strong nitric acid, when a large amount of albumin comes down in the form of thick, curdy clots; a small amount either as a light flocculent precipitate or a simple turbidity. When the fluid cools, the presence or absence of a fibrin clot is noted. This is a gelatinous mass when seen

fresh and undisturbed, but on agitation of the fluid collects into a small opaque mass of more dense fibrin resembling that seen after whipping fresh blood.

The amount of fluid used successfully in inoculating guinea-pigs varied from 2 to 9 c.c., and the injection was made subcutaneously into the anterior chest-wall, under conditions as nearly aseptic as practicable.

To complete the examination, a conical tubeful of the fluid is then rapidly centrifuged for five minutes and the sediment stained on a coverslip with Jenner's differential stain. A differential count is then made of the leucocytes; the endothelial cells, erythrocytes and general characters noted. In no instance were tubercle bacilli found in the fluid, although about one-half of the cases were examined for them. All the pleural fluids were either alkaline or neutral reaction, usually strong alkaline.*

SERIES A.

OBSERVATIONS ON CASES OF PLEURITIC EFFUSION OF PROVEN TUBERCULOUS ORIGIN.

Case I.—Tapped twice. Thirty-two ounces. Highest temperature, 104° F.; average, 102° F. Fluid. Specific gravity, 1024. Fibrin, moderately large amount.

Lymphocytosis on differential count:

	Per Cent.
Small lymphocytes	92
Large mononuclears	7.2
Polymorphonuclears	.8
Eosinophiles	.0
	100.0

Result of guinea-pig inoculation: General tuberculosis in spleen, liver, lungs, glands. Tubercle bacilli in abundance.

Case II.—Tapped once. Thirty ounces. Highest temperature, 104.5° F.; average, 101.2° F. Fluid. Moderately large amount of fibrin.

Lymphocytosis on differential count:

	Per Cent.
Small lymphocytes	98
Large mononuclears	2
Polymorphonuclears	0
Eosinophiles	0
	100

Result of guinea-pig inoculation: Tubercles in spleen, liver, axillary and peritoneal glands; cheesy, tubercle bacilli in abundance.

Case III.—Tapped twice. Twenty-three ounces. Highest temperature, 105.5° F.; average, 101.5° F. Fluid. Specific gravity, 1012. Fibrin, moderately large amount. Albumin, large amount.

Lymphocytosis on differential count:

	Per Cent.
Small lymphocytes	90
Large mononuclears	1.7
Polymorphonuclears	7.7
Eosinophiles	.3
Basophiles	.3
	100.0

Result of autopsy: Acute miliary tuberculosis of both lungs, tubercular peritonitis.

Case IV.—Tapped twice. Sixty ounces. Highest temperature, 101° F.; average, 99.5° F. Fluid. Specific gravity, 1019. Fibrin, large amount. Albumin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	100

Result of autopsy: Both pleuræ thickened; fresh tubercles on left pleura; old tuberculous foci with cicatrization on right.

Case V.—Tapped once. Twenty-five ounces. Highest temperature, 104° F.; average, 101° F. Fluid. Specific gravity, 1014. Fibrin, large amount. Albumin, large amount.

Lymphocytosis on differential count:

	Per Cent.
Small lymphocytes	98
Large mononuclears	2
	100

Result of guinea-pig inoculation: Scattered miliary tubercles throughout both lungs and spleen; cheesy axillary glands.

Result of autopsy on patient: Miliary tubercles over both pleuræ and in both lungs; tuberculous peritonitis and colitis.

Case VI.—Tapped once. Forty-eight ounces. Highest temperature, 100.5° F.; average, 98.4° F. Fluid. Specific gravity, 1022. Fibrin, moderate amount. Albumin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	97.5
Large mononuclears	2.5
	100.0

Result of autopsy: Miliary tubercles on right pleura and scattered throughout the right lung. Had articular rheumatism five years ago.

Case VII.—Tapped twice. Forty-five ounces. Fluid. Specific gravity, 1022. Fibrin, large amount. Albumin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	98.4
Large mononuclears	.3
Polymorphonuclears	1.3
	100.0

Result of autopsy: Miliary tubercles on right pleura and in right lung; extreme arteriosclerosis with cardiac hypertrophy and dilatation; chronic myocarditis; chronic diffuse nephritis.

* It will be seen in looking over the cases that sometimes there is no mention of the specific gravity or the fibrin or the albumin content. This is owing to the fact that in some of the earlier cases their importance was not recognized and the results were originally to be based on subsequent histories of the cases after two to five years, so that sometimes only a differential count was made. The later cases wre all routinely examined as detailed above.

Case VIII.—Tapped once. Twenty-five ounces. Highest temperature, 102° F.; average, 100.4° F. Fluid. Specific gravity, 1022. Fibrin, large amount. Albumin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	96
Large mononuclears	1
Polymorphonuclears	3
	100

Result of guinea-pig inoculation showed tuberculosis of lungs.

Case IX.—Tapped once. Forty ounces. Highest temperature, 104° F.; average, 101.5° F. Fluid. Specific gravity, 1012. Fibrin, large amount. Albumin, large amount.

Lymphocytosis, on differential count:

Small lymphocytes	100
Large mononuclears	0
	100

Result of autopsy: Fluid in both pleural sacs; acute miliary tuberculosis, both lungs; chronic endocarditis, with marked cardiac hypertrophy and dilatation. Had articular rheumatism two years ago.

Case X.—Tapped three times. Forty-three ounces. Highest temperature, 104° F.; average, 101.1° F. Fluid. Fibrin and albumin in large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	100

Result of guinea-pig inoculation: Miliary tuberculosis of lungs and liver.

In looking over this series one is struck by the following facts: That so far as examined, they show a fluid with a specific gravity over 1012, ranging from 1012 to 1024, with an average of 1018.3, a large or moderately large fibrin clot, and a large amount of albumin, besides a lymphocytosis from ninety to one hundred per cent., averaging 96.9 per cent. (Here and elsewhere a lymphocytosis refers to the small lymphocytes.)

The day of disease on which these cases were tapped varied from the fifth to the forty-second as follows: Fifth, sixth, seventh, thirteenth, fourteenth, sixteenth, twenty-first, twenty-eighth, thirty-seventh, and forty-second, but not even in those examined during the first week was there seen a polymorphonuclear leucocytosis, as is said often to be the case by Guilland,[7] Wolf,[8] Barjou and Cade[9] and Utichelis[9]. The nearest approach to this was seen in Case X, Series B. It would seem, however, from the observations of others that a high polymorphonuclear leucocytosis might be found early, and subsequent differential counts be necessary to clear the diagnosis, although comparatively few cases need tapping much before the latter part of the first week, unless the fluid accumulates very rapidly.

The relative number of cells in the fluid appears of no importance, or at least their importance, if any, is not known, for in this series some cases showed a very large number of cells, and in others it was necessary to count an entire coverslip in order to get fifty or a hundred for a diagnosis; this too, after centrifugating. A point of interest is, that, so far as noted, some of the cases showed the presence of few endothelial cells, and others of many, which is quite at variance with Dopter's[5] statement that "in tuberculous pleurisy, we find particularly an absence of endothelial cells." Nor are their presence a positive indication of an effusion of long duration, as they were found in abundance in Case XI on the sixth day.

The temperature curve in these cases of proven tuberculous pleurisy is also of interest compared with the probably tuberculous and postpneumonic cases, the highest temperature recorded being 105.5° F., while the average highest was 103.2° F. The average range from admission to discharge being 100.7° F. (see Table of Averages), hence it is seen that the true tuberculous cases show a tendency to high temperatures, particularly early in the disease, or until the fluid is at least in part removed.

The color of the fluids varied between a straw, amber, greenish, yellow or reddish tinge, the highest recorded amount of fluid obtained being forty-eight ounces, lowest twenty-three ounces, with an average of 32.6 ounces.

Two cases of especial value from the point of view of differential diagnosis, were numbers VII and IX.

Number VII was that of an old colored man with extreme arteriosclerosis, myocarditis and chronic nephritis, who from time to time had excessive attacks of contraction of the arteries, with asthma. He got up fluid in one side of his chest, and at first the natural supposition was that it was a transudate, as he had been gradually failing. However, a diagnosis of tuberculous pleurisy was made after a morphological examination of the fluid, as it showed the typical earmarks of a tuberculous effusion, and this was confirmed at autopsy, ten days later. Case IX was somewhat similar, although a marked endocarditis with failing compensation was the occasion for seeking hospital treatment. The mitral and aortic valves were much damaged, and the fluid which collected in both pleural sacs was supposed to be the result of his impared circulation. Examination of the fluid showed it to be a tuberculous process, this also being confirmed by autopsy.

SERIES B.

OBSERVATION ON CASES OF PLEURITIC EFFUSION OF PROBABLE TUBERCULOUS ORIGIN.

Case I.—Tapped three times. Ninety-two ounces. Highest temperature, 102.4° F.; average, 100.8° F. Fluid fibrin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	98.8
Large mononuclears	.7
Polymorphonuclears	.5
	100.0

Tubercle bacilli found in sputum.

Case II.—Tapped twice. Nineteen ounces. Highest temperature (in hospital twenty-five days after onset), 101.8° F.; average, 100° F. Fluid fibrin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	98
Large mononuclears	2
	100

Case III.—Tapped twice. Thirty-four ounces. Highest temperature, 104.6° F.; average, 100.5° F. Fluid fibrin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	95
Large mononuclears	2
Polymorphonuclears	3
	100

Gave good reaction to tuberculin, 2 mgr.

Case IV.—Tapped twice. Fifty ounces. Highest temperature, 102.8° F.; average, 100° F. Fluid. Specific gravity, 1020. Fibrin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	98.3
Large mononuclears	.3
Polymorphonuclears	1.4
Eosinophiles	.0
	100.0

Râles at right apex. Severe hemoptysis. Had articular rheumatism fifteen years ago. Gave good reaction to tuberculin, 2 mgr.

Case V.—Tapped twice. Forty-two ounces. Highest temperature, 102.2°F.; average, 100° F. Fluid. Specific gravity, 1020. Fibrin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	98.6
Large mononuclears	1.2
Polymorphonuclears	.0
Eosinophiles	.2
	100.0

Gave good reaction to tuberculin, 2 mgr.

Case VI.—Tapped once. Eighteen ounces. Highest temperature, 103.8° F.; average, 100° F. Fluid. Specific gravity, 1020. Fibrin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	91.6
Large mononuclears	8.4
	100.0

Case VII.—Tapped four times. One hundred and fifty-two ounces. Highest temperature, 103.8° F.; average, 101.8° F. Fluid. Specific gravity, 1020. Fibrin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	96
Large mononuclears	2
Polymorphonuclears	2
	100

Case VIII.—Tapped three times. Fifty-six ounces. Highest temperature, 103.4° F.; average, 99.5° F. Fluid. Specific gravity, 1024. Fibrin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	100
Large mononuclears	0
	100

Case IX.—Tapped four times. One hundred and eighty-nine ounces. Highest temperature, 104.2° F.; average, 100.7° F. Fluid. Specific gravity, 1022. Fibrin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	100

Patient had bloody expectoration.

Case X.—Tapped twice. Fifty-three ounces. Highest temperature, 103.6° F.; average, 102° F. Fluid. Specific gravity, 1018. Fibrin, large amount.

Lymphocytosis, on differential count:

		Per Cent.
On the eleventh day.	Small lymphocytes	65.5
	Polymorphonuclears	34.5
		100.0

		Per Cent.
On the sixteenth day.	Small lymphocytes	97
	Polymorphonuclears	3
		100

Case XI.—Tapped once. About forty ounces. Highest temperature, 102° F.; average, 100° F. Fluid. Specific gravity, 1020. Fibrin and albumin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	100

Case XII.—Tapped once. Twenty-three ounces. Highest temperature, 103.5° F.; average, 100.7° F. Fluid. Specific gravity, 1,018. Fibrin and albumin in large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	98.00
Large mononuclears	1.33
Polymorphonuclears	.67
	100.00

Case XIII.—Tapped once. Fifty-two ounces. (Fluid in chest on discharge.) Highest temperature, 103°F.; average, 100.6° F. Fluid. Specific gravity, 1016. Fibrin and albumin in large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	100

Patient has night sweats.

Case XIV.—Tapped once. Ten ounces. Highest temperature, 103° F.; average, 99.5° F. Specific gravity, 1016. Fibrin and albumin in large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	94
Large mononuclears	0
Polymorphonuclears	6
	100

Sent to laboratory for diagnosis.

Case XV.—Tapped once. Six ounces. Highest temperature, 102.2° F.; average, 99.6° F. Fluid. Specific gravity, 1015. Fibrin, moderate amount; albumin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	84
Large mononuclears	3
Polymorphonuclears	10
Eosinophiles	0
Basophiles	3
	100

Gave good reaction to tuberculin, 4 mgr.

Case XVI.—Tapped twice. Eighty-nine ounces. Highest temperature, 104.5° F.; average, 101.5° F. Fluid. Specific gravity, 1016. Fibrin and albumin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	94.5
Large mononuclears	0.0
Polymorphonuclears	5.5
	100.0

Fine râles at right apex. Tubercle bacilli in sputum.

Case XVII.—Tapped once. Fifty-five ounces. Highest temperature, 102.5° F.; average, 100.2° F. Fluid. Specific gravity, 1024; albumin in large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	95.0
Large mononuclears	4.0
Basophiles	1.0
	100.0

Fine râles at both apices of lungs. Moderate reaction to tuberculin, 2 mgr.

Case XVIII.—Tapped three times. One hundred ounces. Highest temperature, 105° F.; average, 100° F. Fluid. Fibrin and albumin in large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	96.5
Large mononuclears	0.0
Polymorphonuclears	3.5
	100.0

Had articular rheumatism five years ago.

Case XIX.—Tapped twice. Sixty-two ounces. Highest temperature, 101.8° F.; average, 100.2° F. Fluid. Fibrin and albumin in large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	91.5
Large mononuclears	5.0
Polymorphonuclears	3.5
	100.0

Fine crepitant râles at left apex persisting for months.

Case XX.—Tapped four times. One hundred and fifty-nine ounces. Temperature about normal. Fluid. Specific gravity, 1016. Fibrin and albumin in large amount, reddish color.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	87.0
Large mononuclears	.5
Polymorphonuclears	12.5
	100.0

Although the patient had a chronic endocarditis, the effusion was probably a true exudation on account of its specific gravity, fibrin, and albumin content. Had articular rheumatism twenty years ago.

In the cases which are included among those of probable tuberculous origin, one sees the marked similarity to those of proven tuberculosis, in the specific gravity, albumin, and fibrin content and in that each has a lymphocytosis. While some of them have points in their physical examination of the lungs—sputum, tuberculin reaction—which stamp the effusion as almost surely of tuberculous origin, *e.g.* Cases I, IV, IX, XVI, XVII, the others are included in the series on account of their conforming more or less closely in the morphological examination of the fluid to those known to be tuberculous. (Series A.)

The specific gravity of these effusions, where noted, ranged from 1015 to 1024, with an average of 1019.4, as compared with 1018.3 of Series A, a very slight difference. The fibrin and albumin content, wherever noted, was large, as was the case also in Series A; while the small lymphocytes ran from 84 to 100 per cent., (omitting Case X, which showed 34.5 per cent. of polymorphonuclears on the eleventh day, while the small lymphocytes went up to 97 per cent. on the sixteenth day), with an average of 96.1 per cent. as compared with 96.9 per cent. of Series A.

The amount of fluid withdrawn was from 6 to 159 ounces, averaging 53.2 ounces, which is a somewhat higher quantity as compared with the cases of proved tuberculosis.

So far as temperature is concerned in these cases, we find it from 105° F. to normal, but with an average highest temperature of 102.9° F., as compared with 103.2° of Series A. the average temperature for all from admission to discharge being 100.4°, or almost exactly that of the tuberculous cases. (See Table of Comparisons.)

Following these comparisons it is easily seen that the diagnostic points of Series A and B are for the most part almost identical, and offer good ground for making a fairly positive diagnosis of tuberculous pleurisy in the cases of Series B. An odd fact is that in those cases in which the tuberculous pleurisy was not terminal, the patients were in almost every instance attacked while in apparently robust health, many, if not quite the majority of them, never having been ill before.

SERIES C.

OBSERVATIONS OF SEROUS PLEURITIC EFFUSIONS FOLLOWING LOBAR PNEUMONIA.

Case I.—Tapped once. Thirty ounces. Ten days after defervescence. Highest temperature, 100.5° F.; average, 99° F. Fluid. Fibrin, large amount, clear amber. Polymorphonuclears in excess.

	Per Cent.
Polymorphonuclears	58.6
Small lymphocytes	36.4
Large mononuclears	5.0
	100.0

Case II.—Tapped twice. Ten ounces. Highest temperature, 102° F.; average, 100° F. Fluid. Specific gravity, 1016. Albumin in large amount, straw amber. Polymorphonuclears in excess.

	Per Cent.
Polymorphonuclears	75.6
Small lymphocytes	23.4
Eosinophiles	1.0
	100.0

Tapped seven days after end of pneumonia; temperature continued moderately elevated.

Case III.—Tapped once. Five ounces. Highest temperature, 100.2° F.; average, 99.5° F. Fluid. Specific gravity, 1016. Fibrin and albumin in large amount. Polymorphonuclears in excess.

	Per Cent.
Polymorphonuclears	67.5
Small lymphocytes	28.5
Large mononuclears	4.0
	100.0

Tapped six days after defervescence; fluid looked like slightly diluted blood.

Case IV.—Tapped twice. Six ounces. Highest temperature, 105.2° F.; average, 103.2° F. Fluid. Specific gravity, 1015. Fibrin, rather curdy, albumin fairly heavy amount. Polymorphonuclears in excess.

	Per Cent.
Polymorphonuclears	92.5
Small lymphocytes	.5
Large mononuclears	7.0
	100.0

Fluid accumulated during course of long pneumonia.

Case V.—Fluid from operation unknown amount, bloody character. Highest temperature. 101.5° F.; average, 100.5° F. Fluid contained a fairly large blood clot. Polymorphonuclears in excess.

	Per Cent.
Polymorphonuclears	78.0
Small lymphocytes	11.5
Large mononuclears	10.5
	100.0

Operation performed supposing it an empyema; no morphological examination preceded. Microscopical examination showed diplococci which looked like pneumococci. No cultures made. Patient died. (Child.) No autopsy.

Case VI.—Tapped once. Thirty ounces. Highest temperature, 104° F.; average, 101.5° F. Fluid, green amber. Specific gravity, 1019. Fibrin and albumin in large amount. Polymorphonuclears in excess.

	Per Cent.
Polymorphonuclears	71.2
Small lymphocytes	28.8
Large mononuclears	0.0
	100.0

Tapped on the fourth day of pneumonia; signs of consolidation persisted after the fluid was withdrawn and defervescence came normally.

This series is given as illustrating the points in differential diagnosis from the tuberculous cases, which is accomplished principally by the differential cell count; as the color, specific gravity, albumin and fibrin content are much the same as one finds in the cases of tuberculous origin, either proven or probable. When the differential cell counts are examined and compared with the other classes one sees an invariable polymorphonuclear leucocytosis ranging from 58.6 per cent. to 92.5 per cent., with an average of 71.7 per cent., even though the serum is often clear and corresponds in other respects to the tuberculous effusion.

So far as the development of an empyema is concerned, no prognostic value could be attached to the percentage of polymorphonuclears, as none of these cases developed it.

In examining the temperature curves it is seen that when an effusion developed during the course of a pneumonia the temperature was that belonging to the original disease, and was high, as in Case IV and VI; leaving these out of account we have a highest temperature from 100.2° F. to 102° F., with an average highest temperature of 101.5° F., which is much lower than that of Series A and B (see table); while the average

for the entire series (again with the same two exceptions) is seen to be 99.7 per cent., which is also lower than that of either of the two preceding classes. While these cases are too few in number to formulate positive conclusions from, still, it seems pretty certain that cases of pneumonic

First as illustrating the differential points between a transudate and an exudate, the former having a low specific gravity average 1008.6 for these cases, a small amount of fibrin, or none at all, and a small amount of albumin, which appears simply as a cloudiness of the fluid or at most as

OBSERVATIONS ON CASES OF PLEURAL TRANSUDATES.

Series D.—Transudates.

Diagnosis.	Color of Fluid.	Specific Gravity.	Fibrin.	Albumin.	Differential Count.	Small Lymphocytes. Per Cent.	Large Mononuclears. Per Cent.	Polymorphonuclears Per Cent.	Eosinophiles. Per Cent.	Basophiles. Per Cent.	Notes.
Chronic Nephritis. . . .	Straw Yellow	1010	Slight	Flocculent	Lymphocytosis	100	0	0	0	0	Temp., 97° to 100° F.
Same	Pale Gray	1007	None	Small Small Flocculent	Lymphocytosis	86	0	9	4	1	Tem., 98° to 100° F.
Chronic Endocarditis . . .	Yellow Amber	1010	None	Small Flocculent	Lymphocytosis	98	1	1	0	0	—
Cardiac dilatation with acute pericarditis . . .	Yellow	1008	None	Small Flocculent	Lymphocytosis	99	0	1	0	0	Tem., 97° to 104.7 from acute pericarditis
Cardiac dilatation and hypertrophy	Yellow	1008	Slight	Small Flocculent	Lymphocytosis	92	8	0	0	0	Tem., 98° to 100° F.

serous effusion have a lower average temperature than tuberculous cases, although there are exceptions at both ends of the scale.

The amount of fluid withdrawn, while not positively of diagnostic value, is of interest by com-

a light, flocculent precipitate on adding strong nitric acid. Second, in that the transudates all show a *positive lymphocytosis*—eighty-six to one hundred per cent., showing the fallacy of what has already been said, of basing a diagnosis of

TABLE FOR AVERAGE FOR COMPARISON.

Form of Pleural Fluid.	Specific Gravity.	Amount of Fibrin.	Amount of Albumin.	Differential Count.	Temperature.		Amount of Fluid.
					Average Highest.	General Average.	
Proven tuberculous . .	1018.3	Large	Large	Lymphocytosis 96.9 per cent.	103.2° F.	100.7° F.	32.6 oz.
Probably tuberculous .	1019.4	Large	Large	Lymphocytosis 96.1 per cent.	102.9° F.	100.4° F.	53.2 oz.
Post-pneumonic	1016.5	Large	Large	Polymorphonuclears, 71.7 per cent.	101° F.	99.7° F.	18.5 oz.
Transudates	1008.6	None or Small	Small	Lymphocytosis 95 per cent.	?	?	?

parison. The amount varied from five to thirty ounces, with an average of 18.5 ounces, or much below that of the tuberculous cases.

Several samples of fluid were received with the diagnosis of tuberculous pleurisy, which had the characters of a postpneumonic effusion.

The interest in this class of cases is twofold:

tubercular pleurisy simply on the differential count, as has been done by Dopter,[5] while Guilland [7] lays stress on the presence of large numbers of endothelial cells as a diagnostic point in transudates, also fallacious, as shown by reference to Series A and B, where large numbers of endothelial cells were frequently seen.

Among the various pleural fluids examined there were two cases resulting from pistol-shot wounds of the chest-walls which gave a marked eosinophilia—one of 70.2 per cent., the other 87.8 per cent. of eosinophiles. The significance of this is not known, and although Widal and Revant [2] report three cases somewhat similar, the eosinophiles running from fourteen to fifty-four per cent., they offer no explanation, and these cases are reported merely as curiosities.

CONCLUSIONS.

While, of course, these cases are too few in number to draw positive conclusions from, the results, as outlined, are at least extremely suggestive, and so far as one can see the uniformity of the analyses in the various series of cases, seems to justify the following tentative conclusions:

1. That a true pleural effusion has a specific gravity over 1010, usually much higher, with an average of about 1017.9; a high fibrin and albumin content.

2. A pleural transudate has a low specific gravity, with an average of about 1008; a small fibrin and albumin content.

3. An almost certain diagnosis of tuberculous pleurisy as can be made by the morphological examination of the fluid alone, and rests on its having a high specific gravity—1012 to 1024, average, 1018.6; a large amount of fibrin and albumin, with an accompanying lymphocytosis. There is usually a considerable rise of temperature at the outset, which may average 103.4° F.

4. According to some authorities, one may find a polymorphonuclear leucocytosis before the third or fourth day of a tuberculous pleurisy; in which case, subsequent examinations will be necessary to establish a positive diagnosis.

5. A diagnosis of postpneumonic serous effusion lies in its high specific gravity, averaging 1016.5; large fibrin and albumin content, with a polymorphonuclear leucocytosis, 58 to 92.5 per cent., averaging 71.7 per cent. The temperature is usually much lower than in the tuberculous cases, unless complicating an active pneumonia. averaging at the outset about 101° F.

6. A differential diagnosis between a pleural transudate and a tuberculous pleurisy cannot rest alone on a differential cell count, as they both show a lymphocytosis, but must rest on a more complete examination, including the specific gravity and the amount of fibrin and albumin, as already shown and explained.

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AN ANALYSIS OF FORTY-TWO CASES OF VENOUS THROMBOSIS OCCURRING IN THE COURSE OF TYPHOID FEVER.

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IN connection with some studies in which we have recently been engaged concerning the cardiac and vascular complications and sequels of those cases of typhoid fever which have been observed in the last fourteen and a half years in Dr. Osler's wards at the Johns Hopkins Hospital, I have gathered together a few statistics with regard to the cases of venous thrombosis which are, it seems to me, of a certain interest.

Out of 1,463 cases of typhoid fever there have been 39 instances of venous thrombosis, a percentage of 2.6.

In addition to these, two similar cases were admitted during convalescence, while one man who had suffered from double iliac thrombosis coming on during typhoid fever, entered the hospital for treatment two years later.

Mortality.—In five of the 39 cases occurring in the hospital there was a fatal result—12.3 per cent. In two instances the thrombosis was the direct cause of death, once (No. 27,855) through a pulmonary embolism from a thrombus of the left axillary vein, and once (No. 28,600) from the dislodging of a piece of a thrombus in the left iliac vein with resulting embolism of the inferior cava and right auricle.

DISTRIBUTION OF THE LESIONS.—(*a*) *As to section of the body.* The seat of the thrombus was: In the lower extremities in 40 instances; in the upper extremity in one; in the pulmonary artery in one.

(*b*) *As to side of the body.* The occluded vessel was: On the left side in 26 cases; on the right side in five; on both sides in nine; imperfect records in two.

(*c*) *As to vessel affected.* The affected vessels were: The femoral vein in 21 instances; the popliteal vein in five; the iliac vein in five; the veins of the calf alone in five; the internal saphenous in three; the pulmonary artery alone in one; the pulmonary artery and common iliac in one; the axillary vein in one.

Time of Onset of the Symptoms.—In 39 cases developing in the hospital the time of onset was as follows:

Weeks.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	10	9	5	3	2	4	0	1	1	0	1	1

SYMPTOMS.—1. *Fever.*—In 36 of our 39 cases the development of the thrombosis was associated with fever. In three there was no fever. In 26 cases the fever was intercurrent, the thrombosis coming on before complete defervescence. In 13, the temperature was normal at the time of onset.

2. *Chills.*—In 11 or 28.2 per cent. of these 39 cases, the complication was associated with chills.

In two instances the chills occurred just at the time of recognition of the thrombosis. In two cases the chills occurred before recognition; once four days, and once a week before. In six cases the chills occurred during the complication; once during the period of subsidence and in the other five instances during the height of the process. Once the chills occurred before, during and after the onset of the thrombosis. In one of the three cases entering the hospital after the acute symptoms had passed, a history of chills during the course of the fever was obtained, though their relation in time to the development of the thrombosis was not clear.

3. *Pain.*—The first definite symptom of the thrombosis in every instance was pain. This varied considerably in intensity and suddenness of onset.

In all the cases of *femoral thrombosis* but one there was pain along the course of the femoral vein. In this instance the only symptoms noted in the hospital were those of popliteal thrombosis. The subsequent history of the case, however, made it clear that there must also have been plugging of the femoral vein.

The first localizing symptom of the process was: Pain along the course of the femoral vessels and in Scarpa's triangle in nine cases; pain in the calves in five; pain in the popliteal region in one; unsatisfactory note in three; patient too ill to localize pain in one.

In three of these cases the onset of the pain was strikingly sudden. In the five cases of *popliteal thrombosis* the first localizing symptom in every instance was pain in the popliteal region. In the five cases of *iliac thrombosis* the onset was associated with a sudden sharp abdominal pain in four instances. In one of these cases the pain was extremely severe and associated with leucocytosis. Perforation was suspected and exploratory laparotomy was performed. In the five cases of thrombosis of *deep veins* of the calf the first symptom in every instance, was pain in the calf.

In the three cases of thrombosis of the internal saphenous vein alone, the first symptom in every instance was pain along the vein.

4. *Edema.*—In all of the 39 cases there was swelling of the affected part. In most instances the temperature was raised, and in a number of cases there was redness over the affected vessel. A definite note as to the existence of edema was unfortunately not made in all instances.

(*a*) In 19 cases of femoral thrombosis edema was noted in 11 cases; "swelling" alone in six. There was no edema in two cases.

(*b*) In five cases of iliac thrombosis there was edema in two instances; no edema in three.

(*c*) In five cases of popliteal thrombosis there was edema in two instances; "swelling" in one; no note in one; no edema in one.

(*d*) In five instances in which the deep veins of the calf were apparently alone involved there was edema in one case; "swelling" in three; no edema in one.

(*e*) In all three cases in which the internal saphenous and veins of the calf were involved there was edema.

5. *Palpability of the Thrombotic Mass.*—In 16 out of the 39 cases the thrombotic mass was felt as a palpable cord.

6. *Leucocytosis.*—In 22 cases counts of the colorless corpuscles were made during the complication.

The leucocytes were over 20,000 in	3 cases.
15,000 to 20,000 in	3 cases.
10,000 to 15,000 in	6 cases.
9,000 to 10,000 in	3 cases.
8,000 to 9,000 in	1 case.
7,000 to 8,000 in	1 case.
6,000 to 7,000 in	2 cases.
2,000 to 3,000 in	1 case.

It will thus be seen that in 12 or 54.5 per cent. the leucocyte counts was above 10,000, while in 15 or 66.1 per cent. it was over 9,000.

The highest count, 24,864, occurred in a case of iliac thrombosis in the third week of typhoid fever. In this instance an exploratory laparotomy was performed in view of the possible existence of perforative peritonitis. The lowest count, 2,700, occurred on the day after the onset of a thrombosis, apparently of the popliteal, which occurred in the sixth week without fever and with very slight general symptoms. In eight instances only was a count made on the day of onset of the symptoms.

In these cases the leucocyte count was:

Above 20,000 in	2 cases.
Between 15,000 and 20,000 in	1 case.
Between 10,000 and 15,000 in	1 case.
Between 9,000 and 10,000 in	1 case.
Between 7,000 and 8,000 in	2 cases.
Between 6,000 and 7,000 in	1 case.

In connection with these blood counts it should be remembered that, in every instance but one, the phlebitis came on in the third week of the disease, or later, at a period when according to our statistics, the leucocyte count in uncomplicated cases should not be above 5,500.

Association with Secondary Infections.—Out of our 39 cases there were seven instances in which secondary infections had preceded or coexisted with the onset of the thrombosis.

These secondary processes were: Boils in two cases; well-marked bronchitis in one; gangrene of the lung in one; fistula in ano in one; chronic otitis media in one; amebic dysentery with developing hepatic abscess in one. In the remaining 32 instances there was no clinical evidence of secondary infection.

Post-Mortem Appearances.—In the three instances in which bits of clogged vein were examined histologically evidences of well marked inflammatory changes were found in the walls of the vessel—such, however, as might well have arisen secondarily to the thrombosis. In one of these cases there was, at the point of section, an extensive endophlebitic plaque which, however, probably dated from a period preceding the

typhoid fever. The sections examined came from a spot above the point of origin of the thrombus. There was nothing in the sections which would justify one in drawing conclusions as to the cause of the thrombosis or as to the pre-existence of a phlebitis.

Cultures.—In one case the *Bacillus typhosus* was obtained in pure culture from the thrombus. In one the cultures were negative. No notes were made with regard to cultures from the thrombus in the other two autopsied cases.

After-Results.—Sixteen patients were seen or communicated with at periods, months or years after the onset of the complication. Ten of these were cases of femoral thrombosis; two, of double iliac thrombosis; two, of popliteal thrombosis; two, of thrombosis of the deep veins of the calf.

(*a*) *After-History of Ten Cases of Femoral Thrombosis.*—One patient was seen 2½ months after convalescence; one, ten days after his discharge from the hospital, while two of the others were communicated with a year after the onset, by letter. The other six patients were examined at periods varying from two to twelve years after their illness.

In all instances there was more or less permanent disability. In six cases there had been *edema* lasting for from several weeks to two years. In five cases there was a complaint of *cramps* in calves, especially at night and after exercise. In one the patient complained of sharp *pains* running up through the leg and thigh, especially after standing. In one instance the patient said that when he uses his leg too much "it becomes so weak that he can hardly move it; it seems to give out." In every instance the affected leg and thigh were materially and permanently *larger* than the other. In all cases, excepting in the instance seen ten days after discharge, there were marked *varices*. These were especially extensive in the calf, the popliteal space and on the posterior and inner side of the thigh. In six cases, all but one in which the condition was looked for, there was well-marked varicosity of the veins in the hypogastrium. These seemed to be characteristic. The dilated veins form a triangle with the apex a little below the umbilicus, the blood flowing from the affected thigh to the apex of the triangle and then down again into the inguinal ring upon the other side, passing upward evidently through the opposite iliac vein.

(*b*) *After-History of Two Cases of Double Iliac Thrombosis.*—Two patients who had had a double iliac thrombosis were seen several years after the onset of the complication. In one of these instances there was at first much edema and persistent weakness of the legs. In the other there were few subjective symptoms. In both cases there were most extensive varicosities on both legs and thighs extending upward over the abdomen and anastomosing with the internal mammary veins and other veins in the axilla. The accompanying photograph shows the condition of the more marked of these two cases.

(*c*) *After-History of Two Cases of Popliteal Thrombosis.*—Two cases of popliteal thrombosis were seen several years after the onset of the complication. One of these patients had complained of no trouble whatever. In the other the leg was somewhat weak, and toward the end of the day, it became at times edematous. In both instances the affected leg was somewhat larger than the other, but in neither were there marked varicosities.

(*d*) *After-History of Two Cases of Thrombosis of the Veins of the Calf.*—In one case there was, after leaving the hospital, considerable edema

Fig. 1.

Abdominal Varices in a Case of Typhoid Thrombosis of both iliac veins.

with the development of several ulcers. There is now a fairly well-marked varicosity of the veins of the inner side of the leg and in the popliteal space. The other patient was communicated with by letter. He states "That the leg from the knee down is the source of a little continuous annoyance. It itches and is frequently inflamed during the warm months. It often goes to sleep." The calf measures an inch and a half more than the other.

Final Observations.—Conclusions based upon so small a series of observations are hardly justified. There are, however, one or two points worth emphasizing.

1. In 42 cases of typhoid thrombosis the onset occurred almost invariably in the third week or later.

2. Local pain and fever were usually the first

symptoms. The fever sometimes preceded the localizing symptoms.

3. In 28.2 per cent. of our venous thrombosis occurring in connection with typhoid fever there were chills. In several instances the chill preceded the appearance of localizing symptoms. In the past two years I have seen in consultation three further cases in which otherwise unaccountable chills during convalesence from typhoid fever, were followed by a complicating thrombosis.

4. Venous thrombosis in typhoid fever is usually associated with an increase in the number of leucocytes. The extent of the leucocytosis depends apparently in part, at least, upon the extent of the lesion. It may be moderate, but in other instances of considerable extent—over 20,000. In mild cases it may be absent.

5. The thrombosis is commonest in the lower extremities, especially on the left side. The femoral vein is involved with particular frequency.

6. In the event of a sudden severe pain in the lower part of the abdomen coming on during the latter part of typhoid fever and associated with a leucocytosis, the possibility of iliac thrombosis should always be considered.

7. Venous thrombosis in a lower extremity is always a serious complication of typhoid fever. Although the immediate danger is not great the after results are often grave. In thrombosis of the femoral or iliac veins the affected extremity is usually considerably and permanently enlarged and there is usually more or less permanent disability, extensive varices, often resulting in ulceration; marked weakness of the limb; frequent cramps in the muscles, especially at night and after overexertion. In thrombosis of the popliteal or deep veins of the calf alone, the permanent changes are much less severe, though the leg always remains larger than the other.

8. In thrombosis of the femoral vein a greater or less part of the blood from the affected extremity is often carried up by the iliac vein of the opposite side, the current crossing the abdomen through anastomosis in the hypogastrium, resulting in a characteristic triangular area of varicose veins.

THE TREATMENT OF SIMPLE RECTAL FISTULA BY EXCISION AND SUTURE WITHOUT CUTTING THE EXTERNAL SPHINCTER MUSCLE.[1]

BY HOWARD A. KELLY, M.D.,
OF BALTIMORE.

I AM not aware exactly what plan of treatment for simple fistula is regarded as best by our proctologists to-day, but I desire to suggest for their consideration a method I have tried in about five cases, within the past ten years, with three successes.

To employ this treatment successfully the fistula must be simple and direct, as ascertained by exploring it with a probe, or, better still, by a careful palpation of the lower periphery of the bowel between the thumb and the index finger. I empty the bowel thoroughly, having the patient under my care for at least two days before the operation.

The rectum then is dilated under the anesthetic and a pack is inserted within the ampulla. The external orifice of the fistula, which must be free from any signs of surrounding infiltration, is then circumcised, and after being grasped with forceps the fistulous tract is carefully dissected out, up to its abutment on the mucous surface of the bowel, in the region of the internal sphincter muscle.

The rectal orifice is now very carefully excised through the wound, so as to make a transverse opening parallel to the sphincter fibers, when the excision is completed, and the fistula removed. If the wound is a shallow one, it may be closed by introducing a few interrupted silkworm-gut or silver wire sutures, extending from the skin surface down to the bottom, care being taken to draw the circular muscular fibers together above and below the rectal orifice. I have not yet tried it, but I believe that a figure of eight suture would serve a good purpose by avoiding the use of any buried sutures in a deeper wound. Buried sutures of fine catgut may be used at the bottom of the wound to bring the muscular tissues snugly together horizontally. In whatever way the suturing is done, the utmost care must be taken to bring the tissues everywhere into good apposition and to avoid leaving any dead spaces.

The margin of the bowel is next everted, and the operation concluded by closing the opening on the mucous surface with fine silk sutures. It is a good plan to cut away some of the mucosa below the rectal end of the fistula, so that when the mucous membrane is sutured the mucosa from the upper margin of the opening is drawn down and sutured to a point a centimeter or more below the orifice, in this way covering it in by withdrawing the line of suture from any direct relation to the deeper wound. Dr. J. M. T. Finney has brought the mucosa out into the skin surface and sutured it there with a good result.

After such an operation I make no effort to move the bowels for from five to seven days, keeping the patient on a diet consisting of nothing more than sips of albumin water.

If in a day or two the external wound shows signs of being inflamed, I would at once cut the sutures and drain it. Even if the external wound closes by granulation, the line of union on the mucosa may heal, and the sphincter muscle thus be saved. If the infection breaks through into the bowel, I would at once pass one blade of a pair of scissors, or a bistoury through the opening, divide it with one cut and pack it, when the patient would be no worse off than if an ordinary incision and packing operation along old lines had been done.

[1] Read before the meeting of the American Proctologic Society at Atlantic City, June 8, 1904.

OBSERVATIONS ON THE BLOOD AND CIRCULATION IN UNCINARIASIS.[1]

BY W. G. HARRISON, M.D.,
OF TALLADEGA, ALA.

THE admirable work of Dr. C. W. Stiles in establishing the relationship between certain forms of persistent anemia and hookworm has made the latter a subject of increasing interest to the Southern profession. It is here, in the sandy section of our Southern States, that he found this parasite most flourishing and most destructive.

Uncinariasis is rare in clay soils, hence is quite infrequent in the district where I practice, but it has been my fortune to observe some six or seven cases, who are attending the State Schools for Deaf and Blind at Talladega. While fully conscious that we can reach no safe and scientific conclusions from such limited observations, nevertheless I trust this study is of sufficient import to merit your attention.

It might be interesting to review the entire symptomatology and clinical history of the following cases, especially with reference to the peculiar stare, general edema, depraved appetite, etc., but, for the sake of brevity, this report will be limited to observations on the heart, blood and circulation.

Case I.—T. D., white, male, aged sixteen years, Baldwin County, Ala. Point of maximum intensity of apex beat three-quarters inch below and one and a half inch external to nipple lines. Apical thrill, systolic in time. Heart dulness distinct one-half to three-quarters inch to right of right sternal border. Soft blowing systolic aortic murmur, not propagated. Great throbbing of neck vessels. Pulse soft, very compressible rate 122 (standing). Blood pressure 120.

Under use of calomel, santonin and thymol this boy voided over two hundred hookworms, and four months later his examination reveals the following condition:

Point of maximum intensity one-half inch below nipple and in line with it. No apical thrill, no heart dulness to right of sternal border; soft systolic murmur over center of cardiac area, but not propagated. Pulse rate 96 (standing). Blood pressure 145.

Final observation made April, 1904, just eleven months after institution of treatment, reveals the following changes: Point of maximum intensity five-eights inch below and three-quarters inch inside nipple lines. No throbbing of neck vessels, no thrill, no murmur. Pulse 81. Blood pressure 153.

Case II.—White, male, aged ten years, Chambers County, Ala. Point of maximum intensity, one and a half inch below and one inch external to nipple lines. Dulness about one finger's breadth to right of sternal border; no thrill; soft blowing systolic aortic murmur, distinctly propagated to neck vessels. Marked accentuation of pulmonic second sound. Both venous and arterial pulsations in neck. Pulse rate 124. Blood presure 110.

[1] Read before the Medical Association of Alabama, Mobile, Ala., April 18, 1904.

Under treatment similar to Case I, this patient voided 87 worms, and, upon his return to school after the summer vacation (four months later) an examination shows point of maximum intensity three-eighths inch external and one-half inch below nipple lines. Complete disappearance of murmur; no throbbing of neck vessels; no distinct dulness to right of sternal border. Pulse rate 91. Blood pressure 134. No pulmonic accentuation.

Final observation April, 1904, eleven months after treatment: Point of maximum intensity, five-eighths inch below and one-half inch inside nipple line; pulse 79; blood pressure 148. No murmurs and no throbbing.

Case III.—W. J., white, male, aged thirteen years, Henry County, Ala. Point of maximum intensity, 1¼ inch below and 1¼ inch external to nipple lines; no dulness to right of sternal border; heaving impulse over entire cardiac area visible several feet distant from patient; systolic thrill over center of heart; accentuated pulmonic second sound is loud and snapping. Rough and harsh aortic murmur, propagated down and to the left; venous and arterial pulsations in the neck; pulse rate 122 (standing); blood pressure 104.

Under hookworm therapy this patient was relieved of more than a thousand worms within three days. When he returned to school, four months later, I then made the following note of his condition: Point of maximum intensity, one-half inch below and three-eighths inch outside nipple lines. Both the thrill and the heaving have disappeared; no cervical pulsations. While the murmur is no longer heard there remains a distinct accentuation of the pulmonic second sound. Pulse rate 85, blood pressure 148. Final observation April, 1904, eleven months after treatment, shows point of maximum intensity three-quarters inch below and three-eighths inch inside nipple lines; all throbbing, murmur and pulsations remain absent. There is now no noticeable accentuation of the pulmonic second sound. Pulse rate 73; blood pressure 156.

I should like to report a few details of other cases, but in these alone was I able to thoroughly study the blood changes, and so other cases must be omitted. I will now give a table showing observations on the blood proper:

	Red Cells.	White Cells	Hemoglobin % (Dare)	Polymorphonuclear acidophiles %	Small Mononuclears %	Large Mononuclears %	Eosinophiles %	Blood Pressure.	Pulse Rate (standing.)
Case I.									
Before treatm't.	1,739,462	5,760	27	59	23	12	5	120	122
4 months after..	2,643,154	6,835	55	70	20	6	3	145	96
11 months after.	3,469,808	6,462	83	68	18	9	4	153	81
Case II									
Before treatm't.	1,964,750	6,736	29	64	20	8	7	110	124
4 months after..	2,573,560	6,262	60	65	19	12	4	134	91
11 months after.	4,631,224	7,160	89	66	21	10	3	148	79
Case III.									
Before treatm't.	1,465,790	7,862	21	60	27	9	5	104	127
4 months after..	2,977,232	6,500	70	62	23	12	3	148	85
11 months after.	4,628,134	6,230	79	71	18	8	3	156	73

The pulse rate was always counted while the patient was standing. In the estimation of hemaglobin the Dare instrument was used. There was slight poikilocytosis in Cases I and II, but none in three. No megaloblasts seen. From a careful study of these cases and a few others observed with reference to these symptoms one seems justified in the following conclusions:

1. Uncinariasis through its extreme anemia exerts a most marked influence on the heart, causing apparent increase in size (most likely dilatation), heaving pulsations, relative insufficiency, thrill and murmurs.

2. While these conditions may be accompanied by an accentuation of the pulmonic second sound, nevertheless they rapidly disappear when the cause of anemia is removed, and by slow degrees the accentuation is likewise obliterated.

3. The murmurs are mostly aortic, soft and blowing, but are both systolic and diastolic, all of which suggests they may be either hemic (due to anemia) or caused by relative insufficiency, result of dilatation.

4. The fact that the area of heart dulness seems to diminish susceptibility after the relief of the anemia, would suggest a marked dilatation, and this seems forcibly strengthened by observations on the blood pressure, which went up from 120 to 153 in the first case; from 110 to 140 in the second and from 104 to 156 in the third.

5. The blood cell changes are not especially significant other than indicating a marked anemia. Many more and oft-repeated observations would be necessary to establish a definite relationship between this anemia and the number of eosinophiles.

6. No megaloblasts found in these cases, as has been the rule in previous work.

7. The rise of blood pressure beginning immediately upon removal of the cause is a safe index to the returning strength of the heart.

8. Even in the most desperate cases we may confidently promise rapid improvement immediately after the removal of the worms.

The medical profession cannot be too grateful for the pioneer work of Dr. Stiles. Heretofore regarded as hopeless and incurable because its etiology was unknown, and its pathology unstudied, uncinariasis, through this investigator's own individual effort, has become one of the most easily recognized and readily curable affections. When we justly laud our own profession, let us not forget to render proper praise to our brother workers in the collateral sciences who, like Dr. Stiles, are blazing new paths for themselves and for us. No achievement in many years is attended with more brilliant results than the recognition and treatment of uncinariasis. Heretofore regarded as malaria, heart disease, or disordered digestion, it is now a distinct medical entity, simple in its diagnosis and still more simple in its relief.

OUR AIMS.[1]

BY S. J. MELTZER, M.D.,
OF NEW YORK.

IN discharging the customary obligation of a president to deliver an address at the opening of an annual meeting, I shall follow the frequent custom and confine my remarks to the affairs of the Association.

In electing the present occupant of the presidency you broke away from a proper tradition. The first three presidents were taken from among the founders of the Association. I cannot claim such an honor. I was elected a member, was subsequently put on the Council of the Association in about the same manner as I was honored by the election as president—that is, without having been much consulted about it.

Not knowing very much about the original aims of the Association, nor the particulars of its subsequent history, and there being no published minutes of its proceedings, I have turned to our efficient secretary for some information.

Of the few data now in my possession none is more pleasant and interesting than the fact that neither I nor my predecessors have, or have had, any sad duties to perform. The Association has never yet met with the flag at half mast—for which we are grateful to the fates. But death is not the only decimator of societies. In fact, hardly any society ever dwindles away by the demise of its members. In a thriving society there are always a good many more births than deaths. Whether our Association can be considered as thriving you will know at a glance from the following few figures. According to our secretary, there were at one time supposed to be thirty-nine active members. To-day the Association counts only twenty-nine. That means a loss of 25 per cent. of its membership within the seven years of its existence—and a loss esssentially by resignation.

The Association was organized in 1897 in Philadelphia while the American Medical Association was holding its sessions there. We are again meeting in the shade of this Association, now reorganized and regenerated. Of late years its presidents are no longer merely successful medical politicians, but are leaders in the science and practice of medicine in our country. It was a disappointment to me when I discovered that both present presidents of that leading Association, the retiring president and the president-elect, had been members of our Association and had resigned. What ails our organization? Why do leading clinical men get out of it? There are in the United States many good men who are active workers in the gastro-enterological branch of the practice and science of medicine. Why are they not members of our Association?

Do not accuse me of tactlessness for publicly touching the sore point. In electing me president

[1] President's address, delivered at the opening of the annual meeting of the Gastro-Enterological Association, held in Atlantic City, N. J., June 6, 1904.

of this Association—and I must say without my knowledge and against my wishes—you have given me the privilege, and thus imposed upon me the duty of looking after its welfare, and I can do it only in my own way. I find that the Association is not thriving, is not occupying the proper rank among the high-standing medical fraternities; there must be a cause for it, a pathological focus somewhere. Let me probe for it without regard for the pain which it might give to some of us; it may lead to a radical cure.

What is the aim of our organization? A gastro-enteroligical association might mean a society for the study of the gastro-enteric part of the science and practice of medicine; or it might mean a society of practitioners who make gastro-enteric diseases their specialty. The medical men at large seem to think that our organization is a society of stomach specialists—for stomach specialists; hence their frowning upon its existence. Of the reasons for the disfavor with which such a union is looked upon there are two about which I shall speak. One is that the treatment of the diseases of the gastro-intestinal tract forms an essential part of the activity of the general practitioner, and the separation of this group of diseases into a new specialty is naturally not looked upon by them with favor. The other reason is a more serious one. It must be admitted that there are now in every large city practitioners who pronouncedly make the diseases of the stomach their specialty, and who, by their doubtful activity, throw a discrediting light upon gastro-enterology as a specialty. I am not speaking of the really bad characters. They are too well marked to be confounded with the good and clean men. I am alluding to the men whom we frequently hear speaking in the medical societies, who write numerous articles in the medical journals on some gastro-enterological topic, and who are often credited in the lay press with great discoveries in this specialty. To the undiscerning eye they are the real representatives of gastro-enterology. To the discriminating mind, however, these men and their activity are perfectly transparent. It is nothing but advertising for business sake. They are the men who throw odium upon gastro-enterology as a specialty, and hence the distrust with which the Association of Gastro-Enterology has to grapple.

Are the reasons valid? I shall say no. In the first place our organization is not a society of stomach specialists—for stomach specialists. The Association has in its ranks a goodly number of active members whose practical activity is in the field of general medicine. If the Association had been made up exclusively of stomach specialists, I would not have been its president; I would not have been even a member of it. It is only my very modest scientific activity in our field which brought me into your ranks, and you were liberal enough to honor me with the presidency of the Association, in spite of my published heresies in certain methods of practical therapeutics in diseases of the stomach, for which I still get a gentle rap once in a while from one or the other member of the Association.

No, the aim of our Association is and shall be to bring together all the solid scientific workers in the United States who contribute to the knowledge of the normal and pathological conditions of the gastro-intestinal canal. And there is ample justification for such a union. Many of the most characteristic anatomical, physiological and pathological features of the digestive canal are common to all its parts. But the field is already too large and the problems by far too many to be worked at with profit by a single set of men. One can spend a lifetime in active original work on the motility or the chemistry or the clinical symptomatology of the disorders of only one part of the digestive canal without having accomplished more than one small fraction of his task. At the same time it is indispensable for each student to know and learn the workings of every part of the gut, since they are mostly controlled, at least in a general way, by the same principles. It would be very profitable indeed if all the active students of the workings of the normal and pathological tract: the anatomists, physiologists, pathologists, internists and surgeons would come together, exchange their views and communicate the recent advances made in their respective spheres. The anatomists and physiologists can nowadays learn a good deal from the experience of the intelligent active surgeon. A great deal of benefit can be derived from such a gastro-enterological organization, and there is ample justification for its existence. There can be some discussion as to the advisability of too great a division of labor in the practice of medicine, but there can be no doubt as to the desirability of the division of labor in the study of the science of medicine.

It is our duty, it should be our task, to build up our Association on a high, ideal, scientific basis, and to develop it along the lines we have sketched above. We shall thus dispel all distrust against our organization, and attract to it all the good men who by the nature of their activity belong to us.

Moreover, by so doing we shall also find the means to cope with the evil menacing us by the pernicious activity of the doubtful individuals we have described above. We shall elect to membership only those men whose solid work bears unmistakable witness of their scientific spirit and their scientific worth, and shall exclude such individuals whose prolific writings have the stamp of a pseudo-scientific activity. And, above all, the moral standing of the individual who seeks admission to our ranks should be scrupulously studied. We should shut the door in the face of candidates with any odium upon their activity. Moreover, we should also open the door from the inside for the expulsion of such members whose activity is apt to drag the society down into disrepute, if in spite of all vigilance should such undesirable individuals be found among our ranks. The simple existence of such a paragraph in our

constitution might have a wholesome effect upon the activity of some unprincipled individuals.

For the purpose of attaining the above outlined desirable ends, I recommend in the first place that the president should be empowered to appoint a large committee, say of seven, which shall be entrusted with the proper execution of the following mandates:

A.—To prepare proper amendments to our constitution in which (1) the ideal aims of the Association are set forth in a clear and broad-minded way; (2) the intellectual and moral requirements of candidates are concisely stated; and (3) the provision of methods of punishment should be stated for behavior unbecoming a member of a high-standing medical and scientific society.

B.—To study the good work done on the normal and pathological conditions of the digestive canal, and to persistently urge the men who are doing such work in the United States and Canada to join our Association, provided their moral standing makes them eligible. We should try with perseverance to attract to our ranks good men who are doing creditable work in anatomy, physiology, pathology, internal medicine and surgery of the digestive tract.

I would like also to go on record with another suggestion, which to my mind would tend to solidify and elevate our Association. It is to start an American journal (monthly or quarterly) for Gastro-Enterology, under the careful editorial management of this Association. The original articles should not be too many and only of first order. But the journal should contain a complete classified account of the gastro-enterological literature of this country. Even the sham publications should find a place there, but a fitting one.

However, this suggestion is not offered for its immediate consideration. Elevation, growth and development of our Association should be for the present our first and sole task.

REPORT OF A CASE OF OBSTINATE PHOSPHATIC DIATHESIS CURED BY SYSTEMATIC DILATATIONS OF THE POSTERIOR URETHRA.

BY GEORGE THEODORE MUNDORFF, M.D.,
OF NEW YORK.

IN presenting this short communication, the writer proposes to discuss neither the question of the pathology of phosphaturia, save in a brief way, nor the advisability of the use of the urethral dilator as a routine remedy in the treatment of that disease. It is his purpose merely to offer the result of his observations in a case treated by this method, which had resisted all forms of therapy with the exception of the one in question, and to leave the problem of its true therapeutic value a matter for independent judgment and further experimentation.

It is but fair to state that the case about to be reported was not one of true phosphaturia,—an actual increase in the elimination of phosphoric acid,—but a form of so-called phosphaturia with alkaline urine and the consequent precipitation of the phosphates, which is so often met with in neurasthenics with gastric disturbances. In many respects it did resemble the class of cases to which Tessier has applied the term "phosphatic diabetes" in which phosphaturia and polyuria are combined with loss of flesh and strength. There was great general debility and indigestion, associated with an impaired tone of the nervous system, aching pains in the back and limbs, and on two occasions while under treatment, the patient presented a crop of boils on his neck and arms. The patient, too, excreted an excessive amount of urine, the daily average amounting to a little over ninety ounces. Occasionally, the phosphatic precipitate would represent one-eighth to one-sixth of the entire bulk. The history of the case is as follows:

Case.—Mr. J. W., age thirty-eight years, married, engaged in a large mercantile business, consulted the writer during the fall of 1902. Family and personal history negative, save that the patient admitted having had a gonorrhea some six or seven years ago. This was treated in the usual way by means of internal and local medication, and was cured in about four months. About five years ago, he became allied with a very large mercantile house, and soon assumed a considerable share of its financial responsibilities. In a short time, he began to complain of great nervousness, confusion of mind, irritability and depression of spirits. At this time he noticed that he was passing a large quantity of urine. This did not give him much concern, since he referred to it as a symptom of nervousness. He became alarmed, however, when he observed later that the urine was of a milky color. This peculiarity prompted him to consult his physician. The urine was examined, and was pronounced as containing phosphates. The patient was given mineral acids, and was advised to eat sparingly of meat. Sexual intercourse, too, was in great part interdicted.

No improvement followed this plan of treatment. He was now given benzoic acid in fairly large doses, and advised to take a sea voyage. He remained away from business nearly two months, and, notwithstanding his observing every feature as to proper diet, exercise and medication, continued to grow worse. The glycero-phosphates were now administered, and while the appetite was somewhat encouraged, the condition of the urine remained unchanged. At times, the patient suffered from insomnia, and he was compelled to resort to some of the bromides to obtain relief. His duties at the office were now very much curtailed, and his business hours considerably lessened. He made it a practice, too, to leave the city for a few days every two or three weeks.

Everything was now done that tended to increase the general vigor. Systematic exercise in the open air, and sea-bathing were recommended, and appeared to produce a happy re-

sult. The patient gained in weight, the appetite was increased, and there was a decided change in the general condition. The urine, though, was still loaded with phosphates. Small phosphatic calculi about the size of a small pea were occasionally voided with the urine. The patient was now informed to resume his former work, and was given some bitter tonic. He presented himself at regular intervals for over two years, during which time the daily amount of urine steadily increased; the phosphatic sediment, too, became greater. The general condition was good. It was about this time that the patient came under the observation of the writer.

Status.—Heart and lungs normal; liver not enlarged. No urethral discharge. Prostate slightly enlarged and moderately sensitive. Urine, turbid; upon standing for a few minutes, a heavy white sediment quickly forms. The urine is alkaline in reaction; the specific gravity is 1028; no albumin; no sugar. A small portion of the sediment was examined under the microscope, and found to be composed mainly of the ammonio-magnesian or triple phosphates. There were no pus cells. To determine roughly the proportion of the earthy phosphates, a few drops of ammonia were added to a test-tubeful of the urine. A white precipitate about 5½ c. high was produced, which was not dissolved by heat. In an ordinary-sized test-tube a deposit one centimeter high represents a normal amount. While a sediment of the earthy phosphates does not necessarily indicate that there is an abnormal amount in the urine, it does, however, show the alkaline state of the urine and the possible outcome of such a condition, and it also points out the possible danger of phosphatic calculi formation.

After having filtered out the precipitated earthy phosphates, a small quantity of a saturated solution of magnesium sulphate was added to the same urine in order to estimate roughly the amount of the alkaline phosphates—sodium and potassium phosphates. A milky turbidity of the fluid followed, which may or may not have indicated an excess of the alkaline phosphates. Unfortunately, at no time while the patient was under professional care, was any attempt made to ascertain the quantity of phosphoric acid in the urine. Normally, the average quantity passed by an adult in twenty-four hours is, according to Vogel, about 50 to 53 grains. Whether there was an excess in this case is not known.

Examination for stricture of the urethra proved negative.

Therapy.—The patient was given dilute phosphoric acid, ten to fifteen drops in water shortly after meals. The bladder was irrigated with a mild solution of boric acid two or three times a week. In the way of hygiene everything was suggested that tended to improve the general vigor. Animal food was to be taken with each meal. This was about the general outline of the treatment for nearly five months. Internal medication consisted in the administration of the different mineral acids, benzoic acid, cod-liver oil emulsified with hypophosphites and containing iron, ammonium benzoate and salol. Each in turn was given a fair trial, and each proved ineffectual. The patient gradually grew worse. On two occasions, crops of boils appeared and required lancing. Sugar was never found in the urine. Cystoscopy was performed on several occasions, and revealed a thickened trabeculated condition of the bladder wall. No stones were found. The prostate appeared to be enlarged.

Subsequent Treatment.—Having observed a few instances of "phosphaturia" in cases of retention of urine due to temporary or permanent paralysis of the bladder, as in hemiplegia and paraplegia as well as in cases of prostatic hypertrophy, and recalling the effects of the same treatment in another similar case, the writer was prompted to give posterior dilatations of the urethra and with it dilatations of the internal sphincter a trial in the case under discussion. Kollmann's posterior dilator was used for the purpose. Dilatations were made once every week, and irrigations of the bladder with a mild boric acid or silver nitrate solutions were made a few days after each dilatation. It was remarkable to observe the decided change for the better that occurred after a few treatments by this method. The patient's spirits became brighter, and the turbidity of the urine gradually disappeared. In eight weeks, the urine was absolutely clear. Dilatations were continued for another four weeks, at the end of which time the patient was discharged cured. Since then the writer has seen him at regular intervals, and at no time has there been a return of the old complaint.

About six years ago the author had a similar case under his care. In this instance, there was a stricture of the urethra. Its caliber permitted the introduction of an 18 F. sound. After some preparatory dilatation, it was possible to introduce the regular Kollman dilator. This form of treatment produced in a most striking manner a decided amelioration of the phosphatic condition. Encouraged by this result, the writer began systematic dilatation of the posterior urethra. While an improvement followed, it was not permanent, and the patient finally discontinued his calls at the office.

Without in the least indulging in the luxury of conjecture, the writer desires to express his view as to the *modus operandi* of posterior urethral dilatation in affecting the decided relief in the case here reported. It is well known that a hyperemic or chronically inflamed condition of the prostatic urethra often produces marked neurasthenic symptoms. The nerve supply of this region is exceedingly rich. The bladder, seminal vesicles and the prostate receive filaments from the vesical plexus, which, in turn, is made up of numerous branches from the hypogastric branch of the sympathetic, together with branches from

the sacral ganglia and from the pudendal plexus of the sacral nerves. Any irritation of this locality is sufficient to excite functional disturbances of distant organs. The general symptoms are those of neurasthenia. Is it not possible that the phosphatic condition of the urine is due to some reflex secretive anomaly of the kidney?

Accepting these premises, it is fair to conclude that our patient was suffering from some inflammatory condition of the posterior urethra. The patient had had a gonorrhea, and, as has been already mentioned, there was some enlargement of the prostate gland. Local treatment of the prostatic urethra by means of direct applications of strong solutions of nitrate of silver and the passage of sounds are effective means of relieving congestion, and thus restoring the muscular tone of the adjacent organs. In our case, the posterior dilator, as devised by Arthur Kollman, of Leipzig, was employed, an instrument far superior to the ordinary sound.

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MEDICAL PROGRESS.

PHYSIOLOGY.

The Effect of Alcohol upon the Excretion of Uric Acid.—A consideration of the results of his experiments leads S. P. BEEBE (*Am. Jour. Physiol.*, September 1, 1904, to conclude that it is hardly possible to doubt that alcohol, even in what is considered by the most conservative as a moderate amount, causes an increase in the excretion of uric acid. This effect is seen almost immediately after taking the alcohol. That the above is due to toxic effect in the liver, thereby interfering with the oxidation of the uric acid derived from the precursors in the food, is indicated by the following points: Alcohol taken without food causes no increase; if the food contains less purin there is a smaller increase in excretion; the maximum increase takes place at the same time after a meal as when purin food but no alcohol is taken; the purin bases are effected to the same degree as the uric acid; alcohol is rapidly absorbed and passes at once to the liver, the organ which has most to do with the metabolism of proteid cleavage products. There is no evidence that the alcohol has merely hastened the excretion of urates normally present in the blood; the increased excretion means that a larger quantity has been in circulation, which might be harmful in pathological conditions. The author believes that if the origin of the increased quantity of uric acid be attributed to the impaired oxidative powers of the liver, the results of these experiments will have greater significance than if attributed to uric acid alone. For the impaired function would affect other processes, which are normally accomplished by that organ, and the possibilities for the entrance into the general circulation of toxic substances, of intestinal putrefaction, for instance, would be increased. The liver performs a large number of oxidations and syntheses designed to keep toxic substances from reaching the body tissues, and if alcohol, in the moderate quantity which caused the increase in the uric acid excretion, impairs its power in this respect, the prevalent ideas regarding the harmlessness of moderate drinking need revision. Alcohol is a food in the sense that when used in small quantities the energy from its oxidation may be used for some of the body needs, but since, at the same time, it interferes with the normal activities of a most important organ, its food-value may be counterbalanced by its toxic effect. Salt water may be used in a steam-boiler, and the steam from its evaporation may transmit the energy of the fuel to the revolving wheels, but its corrosive action on the steel forbids its use, like alcohol, except in emergencies.

Contributions to the Knowledge of Ferments.—The decomposition of peroxide of hydrogen on contact with platinum has been called a catalytic effect; and it has been supposed that the catalytic agent acts by virtue of its attraction for one of the atoms in the unstable molecule. Of no uncertain importance from the standpoint of the physiological significance of ferments are the researches of L. LIEBERMANN upon the nature of catalysis by means of colloidal platinum (*Pflüger's Archiv.*, August 15, 1904). The author finds that solutions of colloidal platinum contain active oxygen. The latter may be partly renewed or rendered inactive by means of heating or by means of gases, such as hydrogen and nitrogen. Hydrogen powerfully damages and causes a peculiar change in the colloidal solutions of platinum, as evidenced by the changed color of the latter. If kept in contact with air or oxygen, solutions of colloidal platinum resist the action of heat a longer time than if in contact with such indifferent gases as hydrogen and nitrogen. From this fact the conclusion is drawn that in the catalysis of H_2O_2, oxygen plays an important rôle; the colloidal solutions of platinum possess the capacity of activating molecular oxygen. It would seem as if loose compounds of platinum and oxygen are formed. Up to a certain limit the catalytic action of colloidal platinum upon H_2O_2 is increased if a stream of hydrogen is caused to flow through it. The faster the stream the stronger will the catalysis afterward be. A quantity of hydrogen too great has exactly the opposite effect. The introduction of nitrogen likewise increases the catalytic effect. This increase is attributed to the mechanical agitation produced by the streaming gas, which, by breaking up larger measures of the platinum, renders this capable of uniting with a large amount of oxygen. Ozonized air markedly impairs the activity of colloidal platinum. The animal tissues, such as cartilage, brain-substance, vitreous humour and the crystalline lens and fatty tissue, contain substances, obtained in watery extracts of the tissues, which bring about the catalysis of H_2O_2. These extracts, like those obtained from malt, which also contain similar catalytic agents, contain very little active oxygen. But the former, unlike the latter, do not give the guaiac reaction, which shows that the catalysis of H_2O_2 and the guaiac reaction are due to distinct ferments. The guaiac reaction is as follows: If an alcoholic solution of guaiac resin is mixed with watery solutions of various animal and vegetable substances, or with certain inorganic substances (ferric chloride, etc.), there results a blue coloration. Since it has been shown that this reaction occurs in the presence of oxidizing substances, it follows that in the case of the plant and animal tissues that give the reaction, oxygen must be present. The mechanism of the guaiac reaction seems to consist in a union of guaiac with molecular oxygen and the release of active or atomic oxygen in the presence of an oxidizable surface. This capacity, possessed not only by guaiac resin, but also by many other substances, is probably bound up with the large extent of surface represented in the very fine particles present in solution, the surface attraction of which is capable of tearing asunder the constituents of the inactive oxygen molecule. The active oxygen atom thus liberated is, however, still bound up to such an extent that it can-

not be driven out by gases that are inactive with respect to guaiac tincture. In order to bring about the rapid oxidation of guaiaconic acid, a catalytic agent or ferment is necessary. This catalyser operates by uniting, if only for a moment, with active oxygen, and transferring it from one group of guaiac to another, guaiaconic acid, to whose oxidation the blue coloration is attributed. The guaiac reaction thus throws light upon the mechanism of enzyme action. But it is interesting from another point of view. It helps to explain certain phenomena conected with the destruction of certain foreign and toxic bodies in the organism. Certain pathogenic bacteria can be rendered innocuous by the protective bodies normally present in the organism, only by uniting with these bodies. Buchner calls these protective bodies alexins, and Ehrlich complements. These substances act so slowly that they cannot fortify the organism against an intoxication. On this account another body is necessary, the immune body (amboceptor, matière sensibilisatrice), which will unfold the activity of the alexin or alexins. Only by means of these immune bodies are the protective substances in a condition to neutralize the toxins before they can bring about a general poisoning of the system. The analogy to the phenomena of the guaiac reaction is as follows: The pathogenic agent corresponds to the guaiac, the alexin to the active oxygen, and the immune body to the enzyme. The immune body is nothing more than a catalyser. The specificity of the actions of the immune bodies might depend upon the fact that the foreign agents (bacteria or otherwise) prepare, from some part of the organism or from themselves, an immune body (catalyser) which will hasten the reaction between the protective body and its own toxin. In this respect there is no analogy to the guaiac reaction.

The Combined Action of Proteolytic Enzymes.—A series of experiments were conducted by P. A. LEVENE and L. B. STOOKEY (*Am. Jour. Physiol.*, September 1, 1904), with the view of determining the combined action of various proteolytic enzymes. The observations were made on the combined action of spleen and pancreas, and of spleen and liver. The action either of the minced glands or of extracts of the same was studied. It was found that when spleen and pancreas were allowed to act simultaneously on a foreign proteid, —egg albumin or casein,—the quantity of products of digestion resulting from their action was greater than the total sum of products obtained by the digestion of equal quantities of spleen and pancreas acting separately. It was thus not a summation of the action of two enzymes, but an increase in the digesting energy of one or both. From the results of some of the experiments the increased action might be attributed to the pancreas. Thus when three parts of pancreas and one part of spleen were allowed to act on a foreign proteid, the quantity of digestion products was greater than in the experiments where pancreas and spleen were taken in equal proportions or in proportion of one part pancreas to three of spleen. In another experiment, fresh pancreas was allowed to stand under antiseptic precautions for about forty-eight hours at room-temperature. At the end of that time, all the zymogen of the gland presumably is transformed into enzyme. Fresh spleen was added, and their combined action in foreign proteid was not noticeably greater than an equal portion of pancreas similarly treated and an equal quantity of spleen acting separately. These experiments, the authors believe, seem to corroborate the views of Schiff, Herzen, and Mendel and Rettiger, namely, that the spleen facilitates the transformation of the pancreatic zymogen into the active enzyme.

MEDICINE.

Agglutination With Icterus.—Many observations have been made, and much has been written upon positive typhoid agglutination where typhoid could be positively excluded, but where a more or less intense jaundice was present. Many explanations have been given, and it is therefore gratifying that H. LÜDKE (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 1 and 2), has tested a large number of cases, to determine the cause of the clumping. In seven out of nine cases of catarrhal jaundice a distinct agglutination in a dilution of one to forty was obtained, but most cases of carcinoma congestion, cirrhosis, abscess, fatty degeneration and amyloidosis of the liver were negative, even though the jaundice at times was most intense. All in all, 36 liver cases were examined; of these 32 were icteric, but only 19 showed clumping in a dilution of 1:20 and 11 in a dilution of 1:50 or over. Seven cases of icterus neonatorum gave negative results, but in a number of other diseases (nephritis, diabetes), a very feeble agglutination could be obtained. All positive icteric cases were also tested with bacteria allied to the typhoid bacillus, with the result that the *Bacillus coli*, paratyphoid and vulgare were also aggutinated, but less strongly, except in Weil's disease, which seems to stand in special etiological relation to the *Proteus*.

Bile and its constitutents or the serum of animals treated therewith, had no particular influence; where some agglutination was present, it could be proved that this was a property inherent to the normal serum of that particular animal. Artificial jaundice induced by toluylendiamin, inhalations of arseniuretted hydrogen or injections of ether had very little influence upon the serum in its behavior toward typhoid bacilli. Agglutination may thus occur under three conditions: (1) In typhoid, where it is invariably most rapid and pronounced. (2) In infections with an allied germ, especially in catarrhal jaundice, cholelithiasis and Weil's disease (group-agglutination). (3) Owing to a disturbed composition of the blood. The Widal reaction can thus be no longer looked upon as a specific reaction, though it will still continue to be valuable for the diagnosis of typhoid fever.

Symptomatology of Arteriosclerosis.—Based upon the careful analysis of 54 cases of arteriosclerosis of the arota, not complicated by aortic stenosis, aneurism, coronary sclerosis or nephritis, A. BITTDORF (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 1 and 2), gives the following account of the symptoms: Frequently the face is remarkably pale, often of ashen hue, though sometimes the patients appear decidedly plethoric. There is often a tendency toward obesity and the pupils may differ in size, though their reflexes are normal and no pathological lesions were found in the retina. Abnormal pulsations in the subclavian and corotid vessels are generally very evident, but do not differ from those of chlorosis or aortic valve disease. Phlebectasiæ upon the anterior chest wall may be uni- or bilaterial or may appear only with forced respiration; occasionally they are accompanied by a moderate edema over the upper part of the sternum, such as is sometimes described with aneurism. Respiratory symptoms are signs of pulmonary emphysema, tendency toward catarrh, diffuse dilatation of the bronchi with hemoptyses and an increased susceptibility toward tuberculosis. Cardiac hypertrophy is a very common sign; the first aortic sound is distinct and clear, the second accen-

tuated and often there is slight but distinct dulness over the manubrium sterni corresponding to the second rib on the right side. Rarely systolic pulsation is seen in the second right interspace. The peripheral vessels show slight or moderate arteriosclerosis, and it is not uncommon to find slight differences in the pulse of both sides. Pulsus celer is common, pulsus tardus and paradoxus, rare. The blood-pressure is generally above normal. A valuable aid in diagnosis is the examination with the Roentgen ray, since the dilatation of the aorta resulting from loss of elasticity, will give rise to a very distinct shadow. Less common signs are retinal hemorrhages, embolism of the retinal vessels, glaucoma, dyspeptic disturbances. The patients generally complain of palpitation of the heart and cardiac oppression after exertion, dyspnea, attacks of vertigo, owing to deficient blood-supply of the brain, tinnitus aurium, feeling of weakness in the arms and sometimes tenderness on percussing the upper sternum.

Fatal Case of Boric Acid Poisoning.—The popular fallacy that boric acid is innocuous to the system is contradicted by the report of a case by C. I. BEST (*Jour. Am. Med. Ass'n*, September 17, 1904), which constitutes the fifth thus far announced in the literature. The patient presented a suppurative inguinal adenitis, otitis media and mastoiditis. The inguinal glands were excised and the cavity packed with about six ounces of boric acid powder. Soon after the operation the man developed the typical signs of boric acid poisoning,—profuse vomiting, a papular rash over the face, neck and chest, and a weak irregular pulse. The onset was rapid and the fatal issue came on within four days. There was also delirium and slight rise of temperature. Post-mortem examination showed congestion of the liver, spleen and gastro-intestinal tract, and a cloudy swelling and granular degeneration of the liver and kidney cells. There were also supericardial hemorrhages, together with discoloration and maceration of the tissues about the cavity in which the boric acid was placed. These findings limit the cause of death to one of two things: A toxemia, resulting from the abscess in the groin, or from the medicinal agent employed, as other recognizable causes were not present. Its resemblance to other cases previously reported, together with the demonstrated overuse of the drug, was sufficient for the diagnosis. The clinical features and the lack of success in cultivating pathogenic bacteria from the blood eliminate septicemia, which is the condition most likely to be simulated in such a case.

Multiple Myelomata.—A very remarkable case of multiple myelomata of the bones, has been observed by A. SCHEERE and L. HERXHEIMER, (*Zeitschr. f. klin. Med.*, Vol. 54. Nos. 1 and 2). The patient had been suffering for a long time from vague pains in different parts of the body and had been treated for rheumatism by all who had seen him, until with a slight twisting motion of the body, a fracture of the neck of the femur occurred. Even now there was some hesitancy as to the diagnosis since at no time were Bence-Jones bodies found in the urine.

The Roentgen rays, however, gave a clear picture of the condition of the femur and of other bones, and left no doubt that a serious bone-trouble was present. Other symptoms were an irregular remittent fever and a consecutive anemia. The number of leucocytes present was always normal. At autopsy it was found that the neoplasms had affected a large part of the entire skeleton without causing metastases elsewhere.

PATHOLOGY AND BACTERIOLOGY.

Bence-Jones Albumin.—In a case of multiple myelomata examined by L. LINDEMANN (*Deutsch. Arch. f. klin. Med.*, Vol. 8, Nos. 1 and 2), the urine presented the following reactions: When warmed up to 60° to 65° C., a tenacious precipitate appeared, which partially dissolved on boiling, and reappeared on cooling. Nitric and muriatic acids give rise to a precipitate in the cold, which also dissolved on boiling. The same was true of tannin and acetic acid and of picric acid. Millon's, Adamkiewicz's and Moluch's reaction were positive. The amount of proteid excreted was on the average 2 pro mille. Careful chemical examination showed that the body is more closely allied to albumins than to albumoses, and that it corresponds closely in chemical composition to the proteid excreted in other cases of myeloma previously published.

Changes of the Pancreas in Arteriosclerosis.—Arteriosclerotic changes in the pancreas, in the form of thickening of the intima, more rarely the media of the vessels and thrombosis, are almost invariably found in diabetes, according to G. HOPPE-SEYLER (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 1 and 2). In patients not suffering from glycosuria, arteriosclerosis may also occur, but here the islands of Langerhans are spared, while in diabetes they may be entirely sclerotic or filled with hyaline masses. There seems to be a direct proportion between the severity of the diabetes and the extent of lesion here. Pancreatic changes secondary to cirrhosis of the liver consist chiefly of a perilobular or periacinous connective tissue proliferation which does not involve the islands. In syphilis, the vessels are generally much altered, and the connective tissue strands are thick and penetrate into the interior of the lobules. The condition of the islands will depend upon the presence or absence of sugar in the urine. Other forms of cirrhosis of the pancreas are granular atrophy, analogous to granular atrophy of the kidney and interstitial pancreatitis, starting from the pancreatic ducts. No matter what the type of lesion, the close relation between the condition of the islands and glycosuria, is always evident. Anatomically these resemble closely the glomeruli of the kidneys. Diabetes must thus be regarded as a special manifestation of arteriosclerosis. Other manifestations of arteriosclerosis need not be present, though frequently enough thickened radial arteries, hypertrophy of the left ventricle and albumin in the urine, may be found. If intercurrent disease or arteriosclerosis of some other organ does not kill, the patient will eventually die in coma, since the condition is progressive. Early stages are generally overlooked, since other signs of arteriosclerosis predominate at first. It is odd that even with advanced pancreatic diabetes, symptoms of deficient pancreatic digestion, such as fatty stools or an abundance of muscle fibers in the feces, are usually absent. Alimentary glycosuria can be induced more readily in persons whose vessels are normal, especially if alcoholism is present. The author believes that the test for alimentary glycosuria should be made in all cases of arteriosclerosis, since in its early stages it may be possible to check the process.

Ossification of Lymph-Nodes.—O. LUBARSCH (*Virchow's Archiv*, Vol. 177, No. 3), has examined a large number of lymph-nodes at autopsies and has been surprised to find ossification of frequent occurrence, especially when the glands were formerly the seat of a tuberculosis. He believes that the bone results from

metaplasia of the connective tissue capsule which surrounds the cheesy focus and that the deposit of lime salts in the necrotic tissue forms the starting point. Cartilage and bone are also frequently found in the tonsils, in part due to fetal inclusions of cartilage, in part as a result of the presence of inflamed connective tissue. A. Rückert (*Virchow's Archiv*, Vol. 177, No. 3), believes, however, that bony tissue within the tonsils is derived solely from rudiments of the second pharyngeal cartilege, and that metaplasia of connective tissue does not play a prominent part.

Pathology of Myxedema.—A case of myxedema studied by A. I. Abrikossoff (*Virchow's Archiv*, Vol. 177, No. 3), presented the following interesting lessons at autopsy: The thyroid was completely replaced by fatty and connective tissue, developed undoubtedly after birth, since contours, size and position of the gland were normal, and an acinous distribution was still evident. The hypophysis showed considerable hypertrophy of its anterior portion, the chromophile cell particularly manifesting an increase in size and number, with considerable colloid degeneration. These changes were probably compensatory, since the nuclei were well-preserved and the vessels were everywhere filled with blood.

Chemistry of Tuberculous Tissue.—A large amount of tissue, which had undergone complete cheesy degeneration, was subjected by E. Schmoll (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 1 and 2), to chemical analysis. He concludes that the chief percentage consists of coagulated albumin, whose proteid nature is undoubted since pepsin and hydrochloric acid will convert it into albumose and peptone, and since hydrolytic decomposition will give rise to the typical principles of proteid disintegration. The elementary analysis also resembles that of albumin. The ordinary solvents of proteids do not dissolve it. Nuclear elements could not be detected since these are probably dissolved out as the cytoplasm coagulates.

The Pathology of the Cells of the Sensory Ganglia.—In order to clear up many of the conflicting points concerning the changes that occur in the sensory ganglia cells following section or injury of their peripheral axons, a series of experiments were conducted by E. Lugaro. (*Arch. Ital. de Biol.*, May 31, 1904). The classical type of these changes, as originally described by Nissl, consists of a breaking up of the chromatic substance into distinct masses, beginning at the center of the cell and proceeding toward the periphery, frequently not affecting the marginal portion of the cell, and also accompanied by a displacement of the nucleus toward the periphery with an occasional irregularity of the nucleus. The various types of cells in the sensory ganglia may be considered specifically distinct, both anatomically and physiologically. Following section of the peripheral nerves, these different kinds of cells show a reaction different in type, intensity and promptness. Cells of the same type in different animals react differently. The smaller cells are the first to react and the first to undergo repair. In the plexiform ganglion of the vagus the reaction is more plexiform than in the spinal ganglia. Even though the nerve is put into such a condition that it cannot reestablish its primitive connections with the periphery, reparative processes nevertheless take place always in the sensory ganglia, but not in all the cells. Some of the cells may degenerate. The proportion of the latter varies in the different animals and in the different ganglia, being greatest in the plexiform ganglion of the vagus. The destructive processes that affect the peripheral fibers do not cause any reactive phenomena in the cells that surround the capsules of the nerve-cells; the proliferation of the former and their ability to devour the nerve-cells are really determined by stimuli other than those associated with the reactive phenomena in the nerve-cells. If the lesion of the nerve prevents any re-establishment of its peripheral connections, the corresponding cells, although undergoing repair, present a marked progressive atrophy. In the reaction of the cell to an injury of its neuraxon, the nucleolus becomes hypertrophic. This change, probably an index of the increased trophic activity of the cell, continues during the stage of repair and consecutive atrophy. The cellular modifications caused by section of the nerves represent a rejuvenescence of the cell—an exceptional awakening of the trophic power of the cell during the regeneration of the nerve fiber. These morphological modifications are analogous to those that occur in the embryonic development of the cell, as well as those that are found in the lower orders of animal life.

Cytodiagnosis in Nervous Disease.—Wherever cerebrospinal fluid is to be examined for cellular elements, it should be centrifuged for at least fifteen to thirty minutes. After the supernatant fluid has been poured off, the sediment is taken up by means of a pipette, but sometimes, where no sediment is visible, it is better to pour the entire residue on a glass slide. The simplest and best stain to use is methylene blue. Three to five lymphocytes in one field of the microscope with a magnifying power of 400 to 500 may be regarded as normal, while in pathological conditions four to five to many dozens may be counted. O. Niedner and G. L. Mamlock (*Zeitsch. f. klin. Med.*, Vol. 54, Nos. 1 and 2), have examined the sediment in a number of nervous diseases and report as follows: In nine cases of tabes, hyperlymphocytosis was found five times; in one the lymphocytes were increased only when a gastric crisis came on. Lymphocytosis was also present in four out of six cases of hemiplegia and each one of these four gave a distinct history of syphilis. In a number of other severe, cerebral conditions, the cells in the spinal fluid were not increased. A microscopical examination of the sediment is thus of the greatest value in the diagnosis of syphilitic or metasyphilitic affections of the central nervous system.

THERAPEUTICS.

Urotropin and Helmitol.—The properties of urotropin, as uric acid solvent and urinary antiseptic, are almost solely due to small amounts of formalin, which are split off both in acid and alkaline solution. It is, therefore, invaluable in acute and chronic cystitis, pyelonephritis, pyelitis and posterior urethritis, in typhoid infection of the bladder, to prevent nephritis in scarlet fever, after the use of instruments and in phosphaturia. The urine of patients who have taken urotropin will become ammoniacal less readily if kept than normal urine. A comparatively new compound is the methylene-citric acid salt, known as helmitol. It is said to be superior, since decomposition occurs less readily and the acid radical itself is a derivative of formalin. According to A. Nicolaier (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 1 and 2) helmitol does not, however, possess any therapeutic advantages, for cases that do not yield to urotropin are not much benefited by this derivative. It is more expensive, since larger doses are required,

and the acid radical occasionally manifests toxic properties such as gastro-intestinal disturbance and eczema. The bromine water and Joressen tests for formalin in the urine are equally marked after corresponding doses of the two drugs, and the urine after the use of helmitol does not inhibit the development of bacteria any longer than with urotropin. Since helmitol is twice as expensive as urotropin, the latter should be given in all cases.

Nasal Hydrotherapy.—Nasal hydrotherapy has for its object a modification of the condition of the mucous membrane by more or less prolonged contact with medicated fluid or by the action of the temperature of a fluid; the removal of the more or less viscous secretions in the rhinopharynx; the obtaining of a violent propulsive action to drive out a foreign body or a pathological product formed in situ. With these objects in view, A. COURTADE (*Arch. Inter. de Lary. d'Otol. et de Rhin.*, July-August 1904), defines the terms balneation, irrigation and douche as follows: Balneation is filling the rhinopharynx with mineral, medicated, or waters with a modified temperature without a continuous current. Irrigation is represented by running liquid with feeble pressure, allowing no stagnation of the liquid, as in balneation. Douche signifies an elevated pressure made use of to expel foreign bodies, or pathological products. The irrigation is the ordinary form, the douche being rarely used. In acute coryza, if taken within twenty-four to forty-eight hours of the onset, a half liter irrigation of saline or borated water used morning and evening at a temperature of 48° to 50° C., is often able to stop the coryza in two days; if delayed longer, a cure is not to be expected, although the cause of the disease will be lessened in severity. In the period of decline, when the secretion is mucopurulent and thick, a morning irrigation with saline or alkaline water, an evening irrigation of borated water at the temperature indicated, renders a great service in cleaning out the mucopus adhering to the walls of the pharynx, and constitutes the best prophylactic treatment against otitis media resulting from acute rhinitis, and also prevents extension of the process to the pharynx and bronchi. In coryza good results are reported from the irrigation with milk morning and evening. One case is reported where 25 liters were employed instead of milk, which was used as early as 1864 by Thudicum, a solution of boric acid, chloride of zinc and bicarbonate of soda aa 0.40 centigram, dissolved in a half glass of tepid water, may be used as a nasal bath. Ozena is undoubtedly best treated by the nasal irrigation. The benefit seems to be derived from the quantity rather than the kind of liquid employed. To give one of these large irrigations of 25 liters, two liters of the fluid are sufficient, the reservoir being filled and refilled with the medication already used. An excellent plan is to allow the fluid to run slowly at first to soften the crusts, followed by a more forceful stream to remove them.

The Treatment of Dysentery.—The results of eight years' experience in the treatment of dysentery as practised by the author in the Far East are embodied by J. S. KOLBASSENKO, in No. 21, *Prak. Vrach.*, 1904. In the way of prophylaxis he considers as the most important the following: (1) avoid overexertion; (2) supply the most nutritious food available, and (3) the best drinkable water. In cases of slight or moderate severity the diet should be fluid and bland; apply a warm abdominal bandage made preferably with alcohol of 70° to 80°. If possible give the following emulsion:

℞ Emuls. ol. ricini		180.0
Tinct. iodi		gtt. xx.
Ol. menthæ	aa	gtt. vi.
Ol. cinnamomi		
Chlorof		gtt. xv.
Syr. emulsivi		20.0

M. D. S. A tablespoonful every hour.

Instead of this, one or two tablespoonfuls of castor oil may be administered, with 8 to 10 drops of the iodine tincture or with iodine starch. This is best prepared from potato starch, and presents an almost tasteless and odorless powder of a dark violet or almost black color that is palatable enough even for children. The author relies greatly upon this preparation in the subsequent treatment of the disease, for administered together with the castor oil the iodated starch is evidently not decomposed in the stomach and reaches the smaller and possibly also the large intestines unchanged. It is here that decomposition begins, the liberated iodine acting principally as an astringent and rendering harmless the specific as well as the other toxins that are at the bottom of the trouble. This iodated starch, by the way, is an excellent remedy also in ordinary diarrhea, in infantile diarrhea, as well as in typhoid fever. The preparation should also be introduced into the rectum either in the form of small warm starch injections, or with the addition to them of 20 to 30 drops of tincture of iodine, once or twice a day, to be retained for ten to twelve minutes, or more if possible. After the acuteness of the attack has subsided somewhat, but the ulcerations in the intestines have not disappeared (as evidenced by tenesmus, etc.) the author obtained splendid results from the administration of a following suppository: ℞ Ichthyol—gttas ii—viii (in accordance with the sensitiveness of the intestine to this drug); xeroform, gr. v—viii; antipyrine, gr. vi—viii; bismuth subnitr., gr. xv.—xx.; lanoline and cacao butter each q. s. ut ft. supposit. D. t. No. 10 S. One or two daily. In case of great intestinal irritability it is advisable to add from gr. 1-3 to gr. ½ of the extract of opium or belladonna. As to the action of the drugs the author considers ichthyol as an astringent and disinfectant, xeroform as exciting a favorable effect on the ulcerated surfaces, antipyrine as a powerful astringent and analgesic, and the bismuth reinforcing the action of the xeroform; the suppository has also been found of undoubted benefit in hæmorrhoids. He also obtained good results from warm or even hot injections of water and 20 to 30 drops of creolin, which is too irritating at times, and cannot be retained by the bowels; and it becomes necessary to diminish the dose to a few drops per injection.

Syphilis in the Higher Apes.—A report was published several months ago containing an account of the successful inoculation of a chimpanzee with syphilitic virus from human sources. D. LASAR (*Berl. klin. Woch.*, July 25, 1904), now states that he also succeeded in inoculating a second chimpanzee with virus obtained from the first. The resulting eruption was in the form a generalized papular syphilide and is well shown in a number of photographs which accompany the article. The animal died shortly after with acute miliary tuberculosis and the diagnosis could be verified by microscopical examination of the papules. Lassar claims that this observation demonstrates conclusively that infection of the higher apes with syphilis is possible, and that this animal may serve as a test object, as it were, for the virus and perhaps permit of the production of a specific serum.

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No. 111 Fifth Avenue, New York.

Subscription Price, including postage in U. S. and Canada.

Per Annum in Advance	$4.00
Single Copies	.10
With the American Journal of the Medical Sciences, Per Annum . .	8.00

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SATURDAY, OCTOBER 1, 1904.

THE PROPHYLAXIS OF MALARIA.

The subject of malarial infection is one of no little moment to the physicians of the United States. According to the best information obtainable, the last Census Reports, that in the year 1900 14,874 deaths occurred from this disease with a general incidence of 14.9 deaths in every thousand.

While the incidence of deaths per thousand in 1900 is as 14.9 to 22.1 for the decennial revision of 1890, 14,874 deaths in one year from a preventable disease is a severe indictment of the community, from which the physicians cannot hope to escape entirely.

It is known that for the census year 1900 the death rate from malarial fever was nearly ten times as high among the colored as it was among the whites; and that the highest death rates were in the Southern States, while in the States of Maine and Vermont there were no deaths from malaria in 1890. In all those States, called "Registration States" by the director of the census, because of the completeness of the reports kept by their respective health boards, the death-rate from malarial fever decreased very markedly. But in the non-registration States, particularly the South, the mortality remained higher than it should.

In view of the recent epidemiological work of the various European commissions, the experiences detailed in the recent discussion on the prophylaxis of malaria, held at the last meeting of the British Medical Association, should not pass without comment.

"It is unnecessary," said J. W. Stephens, "to devote sole attention to pools, to miasms, to breeding places, etc., the *Anopheles* itself might be disregarded, but the attention of the physician should be exclusively concentrated on the "*infected Anopheles*." We are, as a body, only beginning to teach the lesson that malaria is a contagious disease, and that, for the tropics at least, the native population, particularly the child population, carries the organism in the blood, and frequently without showing any signs of its presence. It is this apparently healthy but highly infected population which is the great source of malarial parasites, and the great danger. Of the methods of prophylaxis, four deserve special mention. These measures are antilarval, mechanical use of wire netting, quinine prophylaxis and segregation.

The antilarval method is fundamental and if thorough drainage can be effected, it is sufficient, but economically it often assumes such stupendous proportions as to be impracticable. As a system of sanitary reform, however, it should be carried onward as a steady continuous policy. Petroleum sprinkling is a temporary makeshift; the water removal should be made the nucleus of the attack.

Mechanical prophylaxis by wire netting has been demonstrated to be very highly efficient, both by the Italians, and by the Japanese in their recent war procedures. They have shown the remarkable results that in a particular regiment the malarial patients diminished from 2,000 in 1900 to 256 in the first six months of 1903. It is said that even the sentries wore veils and gloves at night.

Quinine prophylaxis is attended with success, if we are to accept the opinions of many that discussed the question. The German investigators claim results from the use of fifteen grains of quinine repeated on two consecutive days, and it seems certain that quinine *per se* is not a cause, of the so-called blackwater fever.

Segregation of the infected individual is the most logical of the recent methods of prophylaxis. This is a procedure comparatively easy in operation, although at times it may cause a great amount of discomfort.

Such is the outline of the results arrived at in this recent discussion. Should its lessons be taken to heart, we may hope for a still further reduction in the mortality of malarial fever in this country.

PUERPERAL ECLAMPSIA AND RECENT PROGRESS.

THE mystery of the causation of eclampsia has always remained one of the alluring problems to which obstetricians in every generation have applied themselves. Its recent discussion at the American Medical Association in the Section on Medicine (see Society Proceedings in the MEDICAL NEWS, p. 1223, June 25, 1904) shows that it still remains a baffling mystery, although some new light has been thrown on its etiology and perhaps also on its treatment.

The most important feature of the discussion was the emphasis laid on the fact that so-called eclampsia undoubtedly consists of more than one type of pathological process and indeed probably represents a group of affections of very various nature and very differing significance. There seems to be no doubt that in certain cases of so-called eclamptic convulsions there is nothing more than a set of reflex convulsive attacks, brought about in highly neurotic individuals by intense irritation of important nerve endings within the abdomen. It is comparatively easy to understand that as convulsions occur in children as the result of a reflex irritation due to the cutting of teeth, so in older persons of unstable nervous equilibrium, corresponding convulsive seizures may take place. It is by no means absolutely necessary that the patient should have previously exhibited a marked neurotic disposition. Pregnancy is a condition that easily lends itself to the bringing about of an irritable condition of the nervous system.

There seems no doubt that in certain individuals so-called eclamptic convulsions must be considered to be frankly hysterical in origin. When eclampsia develops shortly before or just after the birth of the child and is limited to one or two seizures without any serious preliminary symptoms and without important after-effects, it is not unlikely that in many cases the convulsive attack is of a true hysterical character. Anyone who has seen hysterical convulsions, particularly certain of the cataleptic seizures of major hysteria, will not be surprised that such attacks should, in the midst of the excitement of labor, be considered to be eclamptic. It is possible for such a seizure to occur without there having been any very telltale symptoms of hysteria beforehand, although usually there will be found to be a distinct family heredity of neurotic disposition. Some of the many and various remedies which at different times have been recommended as positively curative for this always annoying complication (their name is legion) undoubtedly owe their reputation to their apparently successful employment in cases of this kind. While the condition may for the moment seem very serious it has all the favorable prognosis that a neurotic condition always has and there are no complications or sequelæ likely to do permanent harm to the patient.

On the other hand, the failure of practically all methods of treatment in certain severer cases of eclampsia shows that the true nature of this affection has not yet been discovered, and that the theories of causation so far advanced are probably incomplete. It used to be considered that patients who exhibited a large amount of albumin during the course of their pregnancy were very likely to have eclamptic seizures. Obstetricians of large experience tell, however, that they have frequently followed such patients carefully, keeping them under the most minute observation, in order to avoid accidents, and have failed to see any symptoms of eclampsia develop. In fact, it has come to be generally recognized now that it is not large amounts of albumin in the urine, but instead small, but persistently present, quantities of albumin, which may be followed by a true eclamptic attack, or a series of them. For a time also it was thought that eclampsia always meant that renal insufficiency had been present for some time with a consequent accumulation of excrementitious material in the system. Careful observation has shown that the estimation of the urates and uric acid over long periods does not give any sure indication as to the probable occurrence of an eclamptic attack and that even a marked reduction in the total solids excreted, while it may serve to indicate the approach of nephritic symptoms, does not necessarily signify the approach of eclampsia. Aneuria has been known to occur with death in coma without ever a symptom that might be called eclamptic.

Certain of the fatal cases of eclampsia seem to be due to an increase of pressure within the skull. This is usually the result of edema of the brain, which may be caused by the kidney insufficiency of nephritis. Just why some cases present the tendency for edema of the brain to

occur while others do not, remains one of the mysteries of individual peculiarity. At the recent meeting at Atlantic City, Dr. Robert N. Willson, of Philadelphia, presented some cases in which the diminution of intracranial pressure by means of lumbar puncture brought with it distinct relief from symptoms. It did not, however, cure the patient, and in all of them a distinct amount of edema of the brain was found to be present post mortem.

In the discussion aroused the possible connection between acute yellow atrophy of the liver, the pernicious vomiting of pregnancy, and eclamptic seizures was suggested. Recent post mortem observation has shown that in all of these conditions a specific and characteristic degeneration of the liver cells is present. In the most advanced stages this constitutes the so-called typical acute yellow atrophy. In less advanced cases, lesions that evidently represent initial stages of this same pathological condition are present. How serious some of them are may be best appreciated from the severity of the clinical symptoms, pernicious vomiting and eclampsia, with which they seem to be directly connected in the relation of cause and effect. Investigation along this line of observation may lead to the discovery of the true pathological basis of these severer conditions which has so far been very obscure. Such cases are rare enough even in hospital practice, and as the lesions spoken of are characteristic and comparatively easy of recognition, it would seem that practitioners of medicine anywhere throughout the country who have opportunities to make autopsies on such cases should not miss the occasion to add their quota of information on this important subject.

PROLONGATION OF CONVALESCENCE.

Three years ago the medical world was surprised by a declaration of Sir William Broadbent, in a discussion of typhoid fever at the annual meeting of the British Medical Association that convalescence from typhoid fever should last for at least a year and in many cases longer. It is easy to understand that so serious an illness as typhoid fever and one which so frequently calls for the exercise of all the resistive vitality of the patient, needs more than the scant month or two, that is sometimes allowed for recuperation. On the other hand, there are very few physicians notwithstanding the authority of Sir William Broadbent, who would consider that more than three months is necessary before a patient, who has recovered from typhoid fever, may be allowed to go back to his former occupation.

At the recent meeting of the American Medical Association, at Atlantic City, this question of prolonged convalescence after typhoid fever as well as after other infectious fevers, came up in the discussion on arteriosclerosis.' As we approach our maximum incidence of the disease in the autumn months, it seems well to recall the purport of that discussion. There was a unanimous belief expressed that it is especially on the circulatory system that the toxins of infectious disease are likely to produce their most serious and enduring effect. Unfortunately when there is question of strain upon the circulatory system, the heart is usually considered to be the only element likely to be seriously affected and the arteries are apt to be neglected. At the end of typhoid fever all patients are warned of the absolute necessity of not sitting up suddenly in bed. The practice of gradually raising the head of the bed so as to accustom the heart once more to pumping against the force of gravity, has become widespread. As a consequence of these precautions sudden death at the beginning of convalescence from typhoid fever are rarer than they used to be.

However, the other dynamic factor in the circulation, the arteries, are usually not treated with so much consideration. When arteries lose their elasticity it is well known that the heart must do double work. The active contraction of the arteries is quite as important for the continuance of the circulation as the heart itself. It is also known that the heart suffers to such a degree from the toxins of infectious disease that a certain amount of fatty degeneration is almost the rule. This takes place in the muscular coat and it seems not unlikely that the same structure in the artery suffers if not to the same degree at least to some extent. The arteries recover more slowly than the heart, because their blood supply is not so abundant and their nutritional processes not so rapid.

Hence the necessity for prolonged convalescence after a continued fever, such as typhoid. Dr. William S. Thayer, of Baltimore, pointed out that in very many cases of arteriosclerosis typhoid fever is one of the features of the patient's history. In his observations there is only one other infectious disease, rheumatism, and this has of course an acknowledged reputation for producing serious effects upon the circulatory

system, that is noted more frequently in previous histories of arteriosclerosis patients than typhoid fever. His statistics seem to furnish a clinical demonstration of the theoretical and pathological considerations which have been advanced as emphasizing the necessity for prolonged convalescence.

Of course it will not be easy to persuade the busy men and women of our generation that a year to eighteen months should be given solely to more perfect recuperation when they have already been kept from their occupations for some six to ten weeks during the course of the disease itself. But medical insistence will find many arguments to influence them. The most interesting feature of the results produced by modern progress in medicine is the increase of the length of average life. Five years, at least, has been added to the length of a human generation in the last half century. The too strenuous life is, perhaps, the most serious factor in opposition to further progress in the same line. The overzealous worker must be taught the important lesson that the gain of a few months just now may mean the loss of many vigorous years a little later in life.

At the present time too many people are carried off by any serious illness that attacks them after the age of forty-five. Usually, in these cases, where there is not some distinct organic affection, a degeneration of arteries is at the bottom of their lack of resistive vitality. The persuasion that this is frequently due to infectious disease and the neglect of sufficient convalescence therefrom is now very common among clinicians of large experience. There is opportunity for a distinct improvement in medical practice that will save not a little of after-suffering and incidentally prolong life.

Typhoid fever, of course, is not the only affection the sequelæ of which are to be feared. There is no doubt in the minds of many conservative clinicians that the modern coal-tar treatment of rheumatism, by freeing patients from pain sooner than formerly, has been one reason for more frequent permanent heart crippling and arterial degeneration after rheumatic fever. After the so-called ordinary diseases of childhood the tendency of parents is to send children back to school just as soon as permission can be obtained for them to return, that is to say, as soon as the Board of Health considers that they are no longer in danger of spreading the disease. This practice is undoubtedly fraught with no little risk to the child's developing organism and to prevent it the family physician should demand a longer period of convalescence. If this were done we should hear much less of measles and whooping-cough as a predisposing cause of tuberculosis. In fact the resistive vitality of young patients is so much lowered by these so-called trivial diseases, that a subsequent infection, which ordinarily would be thrown off readily, finds favorable soil for growth. There is in this important matter of the prolongation of convalescence a special field for the family physician and the general practitioner of medicine that cannot fail to be fruitful of good for this and future generations.

ECHOES AND NEWS.

NEW YORK.

Reception to Visitors at Academy.—Next Thursday evening, October 6, 1904, a general reception will be held at which many distinguished foreign confrères will be present. The profession of the city are cordially invited to attend and to extend their welcome to our colleagues from foreign lands.

Columbia University.—The following is the list of the newly appointed professors in the medical department: Gorham Bacon, M.D., Professor of Otology; Joseph A. Blake, M.D., Professor of Surgery; George E. Brewer, M.D., Professor of Clinical Surgery; James R. Hayden, M.D., Professor of Genito-Urinary Diseases; Arnold Knapp, M.D., Professor of Ophtholmology; Samuel W. Lambert, M.D., Professor of Applied Therapeutics; Harry McMahon Painter, M.D., Profesor of Clinical Obstetrics; Frederick Peterson, M.D., Clinical Professor of Psychiatry; William K. Simpson, M.D., Professor of Laryngology, and John S. Thacher, M.D., Professor of Clinical Medicine.

The following appointments of adjunct professors are also announced: Frederick R. Bailey, M.D., Adjunct Profesor of Normal Histology; Eugene Hodenpyl, M.D., Adjunct Professor of Pathological Anatomy; Russell Burton-Opitz, M.D., Adjunct Professor of Physiology, and Francis Carter Wood, M.D., Adjunct Professor of Clinical Pathology. On Saturday, October 8, a reception by the President to the new appointees will be held in Earl Hall, from four until six o'clock.

The Eastern Medical Society.—The first open meeting for the season of the Genito-Urinary Section of this society will be held on Tuesday, October 4, at 8 P.M., at Clinton Hall. The paper of the evening will be "Ureteral Catheterization, with Special Reference to the Treatment of Pyelonephritis Catarrhalis," by Dr. Winfield Ayres. Discussion by Drs. W. J. Pulley, Follen Cabot, Frederick Bierhoff, Ferd. C. Valentine and possibly others. Cases will also be presented.

Dr. Lederle on Food Adulteration.—Dr. Ernst T. Lederle, who is at present in Germany, prepared a paper on the above subject for the International Congress of Arts and Sciences at St. Louis. It was in part as follows: "An important field is now opening to the sanitarian in the investigation of manufactured food products. The extent to which

commercial adulteration and substitution is now practised would be absolutely incomprehensible to the layman. Competition in trade has become so keen and the substitution of inferior constituents in foods so general that the honest manufacturer has hardly a chance to succeed. The use of injurious preservatives has also been practiced to a scandalous extent. The only remedy for this evil condition will be the passage and enforcement of a Federal pure food law. Such a measure has already been before Congress, but in the absence of an aroused public opinion, the mysterious influences which bar the way of much good legislation at Washington have been able to kill it. Much the same opportunity is offered in a campaign against the vendor of patent medicines and secret nostrums. Few people understand the extent to which these articles undermine the public health, and there has been little or no attempt to assume official control over their production and sale. The remedy is official control. Makers of patent medicines, nostrums, pills, etc., should be required to place upon each bottle or packet the exact ingredients it contains, and should be prosecuted for any deviation which can be shown to be detrimental to the health of persons using the remedy, or designed to perpetrate upon them a commercial fraud."

The University and Bellevue Medical School.—The following new appointments for the University and Bellevue Hospital Medical College are announced for the coming year: Dr. George P. Wallace, to be Assistant Professor of Pharmacology; Dr. Herman A. Haubold, to be Clinical Professor of Surgery. A lectureship on pathological chemistry, recently endowed by Dr. Herter, has been awarded for the present year to Dr. Phœbus A. Levene, of the Pathological Institute on Ward's Island. The enrollment of the entering class of the Medical School is more than twenty per cent. larger than it was on the same date last year. Immediately upon the completion of the new medical laboratories, a part of the present Carnegie Laboratory will be set apart for a students' library and reading room.

PHILADELPHIA.

Smallpox Hospital Closed.—The smallpox building at the Municipal Hospital has been closed for the first time in five years, no new cases having been received for four weeks. Director Martin considers the return of the disease as a remote possibility, chiefly because of the house-to-house vaccination kept up during the summer by the medical inspectors. This is to be continued indefinitely.

To Suppress Smoke Nuisance.—The smoke nuisance ordinance goes into effect October 1, and preparations have been made to enforce its provisions. A report has been made on each of the 5,991 buildings possessing steam equipment, specifying if hard or soft coal is used and if smoke-consuming devices are employed.

Addresses by Foreign Physicians.—On Friday, September 30, the students and faculty of Jefferson College were addressed by Dr. Lauder Brunton, F.R.S., formerly lecturer on Therapeutics in St. Bartholemew's Hospital, London, and Prof. Dr. Oscar Liebreich, Professor of Pharmacology in the University of Berlin.

Almshouse Bids to be Readvertised.—Director Martin has requested Director of Public Safety Smyth to readvertise for bids on the new Almshouse, the old specifications calling for a building inadequate for the needs of the city. The plans, prepared under a former administration, are to be materially changed. Councils are also to be asked to change its name from the Home for the Indigent to the Home for the Aged and Infirm.

Jail for Sellers of Impure Milk.—Five milkmen, convicted for selling adulterated or watered milk, have been fined by Judge Barrett from $50 to $75, and sentenced to jail for periods varying from ten to twenty-five days. The grand jury has found indictments against 27 men for selling adulterated Hamburg steak. Food Commissioner Warren is highly pleased with the way the courts are dealing with the men apprehended by his department.

Pathological Society.—The Philadelphia Pathological Society held its first meeting for the season on September 22. Dr. D. J. McCarthy showed specimens of tumors of the choroid plexus and discussed their nature and histology. Drs. David Riesman and A. G. Ellis exhibited specimens consisting of a primary carcinoma of the stomach with secondary extension to the liver and pancreas. Officers for the ensuing year were nominated.

No Exhibits at the Pittsburg Meeting.—At the meeting of the Medical Society of the State of Pennsylvania, held at Pittsburg, September 27 to 29, the usual custom of having an exhibition of books, instruments, drugs, etc., was dispensed with. This was believed to detract nothing from the interest of the meeting as the pharmaceutical exhibit was always composed largely of patent remedy compounds.

Discussion on the Purification of Water.—At the meeting last week of the Franklin Institute, the subject for discussion was "The Use of Copper Sulphate as a Germicide for the Purification of Potable Water." John W. Hill, Chief of the Bureau of Filtration, made the statement that the water as it will be supplied the city after the completion of the filtration plant will be absolutely pure and will not need the addition of copper sulphate to render it free from typhoid bacilli. Director Martin said that the Department of Public Health, in doing what it had toward the use of copper sulphate, was striving for the purification of the water now being served. He is a firm believer in filtrated water but does not advocate sitting quietly by and letting the scourge of typhoid continue while the filters are being completed. The experiments in the laboratory are for the benefit of Philadelphians until they are served with pure filtered water. Most of the speakers agreed that the use of copper sulphate in far greater quantities than are recommended for purifying the water would be harmless to the general population.

The Care of the Insane.—The Association of Superintendents and Trustees of Institutions for the Insane in Pennsylvania held a meeting at the South Mountain Asylum on September 22. The meeting was the largest ever held, the attendance being 28. The inspection of the buildings and grounds and the condition of the 800 insane was a revelation to many of the members. Almost every inmate partly supports himself by labor on the farm in connection with the institution. Papers at the meeting were read by Drs. Robert H. Chase and J. M. Murdoch. Officers elected are: President, Dr. John B. Chapin, Philadelphia; Vice-President, Dr. H. B. Meredith, Danville; Secretary, Dr. M. S. Guth, Warren. The next meeting will be held at Polk, in May, 1905.

Positions at the University.—The position of assistant in bacteriology in the Laboratory of Hygiene, University of Pennsylvania, and the Thomas A. Scott Fellowship in Hygiene in the same laboratory, are vacant for the year 1904-1905. Further information may be obtained from the director of the laboratory.

CHICAGO.

Shorten the Time from the Cow to the Baby; a Plea for Twelve-Hour Milk.—Commissioner of Health, Dr. Arthur R. Reynolds, of this city, presented a paper on this subject before the Section of Public Health of the International Congress of Arts and Sciences, at St. Louis. In introducing the topic, Dr. Reynolds said that State laws and city ordinances prescribed requirements for dairies, milch cows and the constituents of their milk and cream offered for sale. It had been stated, he said, that Chicago could get milk within twelve hours from the time of milking, but that it was usually twenty-four or thirty-six hours old before delivery. The thirty-six-hour old milk was held to be positively harmful to the young in all cases where the milk was not bottled, but shipped in bulk. Dr. Reynolds continued: "Old milk not only starves the young, but it poisons them, causing diarrhea, 'summer complaint,' etc., and the excessive mortality among the young—especially during hot weather, which hastens souring of milk by favoring the growth of the bacteria. Milk is the principal article of diet for children after they are weaned until they are four or five years old. It is the sole article of diet for infants who cannot be nursed by their mothers. Milk, in the diet of adults, does not fill so important a place. Old milk or poor milk may be used for coffee and for table use generally by adults without any great harm, for the quantity used at any time is small compared to their total diet. All milk intended for the use of children should be bottled in the country, immediately after having been thoroughly cooled. The bottles should be put in cases, packed with broken ice, and so shipped to consumers within twelve hours after bottling, and at a temperature below 50 degrees. Milk bottled in the city cannot rank with the country-bottled milk, because it is shipped to the city in cans without being iced, and because after the cream has risen during the transit the butter fat cannot again, without the greatest pains, be thoroughly intermingled with the milk so that each bottles receives its due proportion. Nor are the producing dairies, as a rule, under the rigid supervision that is insisted upon by those who bottle in the country.

Milk Supply of Chicago.—To sum up the most important results of personal investigation of a number of dairy farms from which Chicago receives its milk supply: (1) An increasing proportion of Chicago's milk is delivered to the consumer within twelve hours after milking. The bulk of it, however, is from twenty-four to thirty-six hours old before delivery. There is no insuperable reason why it should not all be delivered within the shorter period, and every effort of the department is being made to this end. (2) There is much room for improvement in the condition of milk production on nearly all the dairy farms visited, except those under the direct supervision of a few large contracting firms. The dairy inspectors of the department are engaged in visiting this class of farms, explaining to their owners the necessary requirements, reporting upon their conditions, and recommending the exclusion of their product from the Chicago market if, after a reasonable time, they fail to conform to these requirments. (3) It costs more to produce clean milk than dirty milk—therefore cheap milk is, prima facie, impure and unwholesome milk, and the housekeeper who buys it is helping to perpetuate unclean conditions of dairies and helping to swell the death rate of the city by having her babies die off from disease caused by stale and impure milk. The consumer should make it an object to the milk producer and the milk dealer to furnish a clean, fresh and wholesome product, by being willing to pay a fair price for such product and by giving personal attention to its quality and proper care after its receipt.

P. and S. Lengthens its Course.—It has been announced that the College of Physicians and Surgeons (Medical Department of the University of Illinois) will extend its course to nine months. The term opened September 27, 1904.

CANADA.

Montreal General Hospital.—At the regular quarterly meeting of the Board of Governors of the Montreal General Hospital, held last week, it was decided to alter the constitution so as to leave the Medical Board free to engage the officers of the resident medical staff from outside of the British Dominions. The constitution now provides that no person shall be eligible for one of the positions of resident medical officer unless he is a graduate or licentiate in medicine in some university or college approved by the Medical Board. Formerly the clause of the constitution was to the effect that the physician must be a graduate or a licentiate of some university or college in "British Dominions." The receipts for the past quarter were $16,071, and the expenditure $21,521. Two donations were received during the quarter, one of $2,000 and the other of $5,000. Dr. J. Alex. Hutchinson read the medical report. During the quarter there had been in residence 781 patients. Of this number 67 died, but 26 of these died within three days of their admission, which would leave the ordinary mortality rate of 5.5 per cent. In the outdoor department there were 9,072 consultations as compared with 8,651 for the corresponding quarter of the previous year.

The Care of Inebriates in Ontario.—On September 19, there was held a meeting at Government House, presided over by the Premier of the Province, the Hon. George W. Ross, for the purpose of discussing the best plans for the care and treatment of the inebriate. Dr. A. M. Roseburgh, of Toronto, who has taken a deep interest in this subject for the past decade, delivered an address setting forth what had been done in the province toward this end, and he was followed by Dr. T. D. Crothers, of Hartford, Conn., who outlined a system for the care and treatment of inebriates. At the conclusion of his address, Professor McPhedran, of Toronto University, moved a resolution to the effect that the time was now ripe for the formation of a society for the reform if inebriates. A committee was organized for the purpose of organizing a society and another meeting will be held at a near date for the purpose of arranging a constitution and completing the regular organization of the new society.

McGill's Medical Faculty Opens for the Season.—Last week McGill Medical Faculty reopened for the session 1904-1905, when there was present Professor Abbott, of the University of Pennsylvania, to deliver the opening address. Dr. Abbott took for his

subject "The Study of Medicine and Recent Advances in Medical Science." Dr. Roddick, Dean of the Faculty, who has just returned from England, announced that while abroad he had interviewed Lord Strathcona, who had promised to contribute $50,000 toward the general purposes of the Medical Faculty of McGill. Regret was expressed at the approaching departure of Dr. Tait McKenzie, who will shortly take up his duties in connection with the University of Pennsylvania.

Canadian Medical Protective Association.—This Association was organized at the Winnepeg meeting of the Canadian Medical Association in 1901, with Dr. R. W. Powell, of Ottawa, as President. According to the third annual report just issued, it has a membership of 288, of which number Ontario makes up 217 and the balance distributed over all of the provinces with the exception of Prince Edward Island, which has not a single member. It is a most worthy organization and deserves the liberal support of the Canadian medical profession. At the recent annual meeting, held at the conclusion of the Canadian Medical Association, the constitution was changed to provide for a more practical and efficient management.

Dominion Registration.—Owing to the fact that the legislature of the Province of Quebec failed to ratify the necessary amendments to the medical laws of that province, the accomplishment of Dominion Registration has not up to the present time been arranged. The question was taken up again at the recent meeting of the Canadian Medical Association, and a strong resolution passed favoring the memorializing of the Quebec Government, the Quebec College of Physicians and Surgeons, as well as educating the medical profession in the province of Quebec, through the lay press, to the advantages of such a measure. It was further advised that Dr. Roddick, M.P., who has taken such a deep interest in the movement, should have at his command a special committee of three prominent and influential members of the Association in each province, for the purpose of exerting their influence upon the Quebec legislature to pass the necessary legislation as will make this most desired Roddick Bill or the Canada Medical Act, valid and effectual.

The Question of Patent Medicines at the Canadian Medical Association.—Dr. C. J. Fagan, of Victoria, B. C., read a timely and important paper at the recent meeting of the Canadian Medical Association at Vancouver. Having heard same the Association appointed Dr. Fagan as chairman of a Special Committee to bring in a resolution on the subject. This was done and it was recommended in same that the Canadian Medical Association should bring the matter to the attention of the Federal Government that the latter should take immediate steps to thoroughly investigate the nature and contents of all patent preparations on the market and to suppress the dangerous and harmful literature, all of which is deemed most prejudicial to the health of the community. The resolution carried unanimously and the matter will be laid before the Federal authorities at an early date.

Personal Items.—Dr. T. F. Underhill, of Vancouver, has been appointed health officer of that city.

Sir Lauder Brunton has been the guest of Professor McPhedran at Toronto, during the past week.

Dr. Charles O'Reilly, medical superintendent of the Toronto General Hospital, has been elected vice-president of the Association of Hospital Superintendents.

Dr. Breffney O'Reilly, only son of Dr. Charles O'Reilly, of Toronto, has gone to Vancouver to assume his duties on the C.P.R.S. Tartar.

The Medical Faculty of Toronto University reopens on October 4.

Dr. M. K. Church, of Merrickville, Ont., is dead at the age of seventy-six years.

The Winnepeg General Hospital has received a donation of $500 from Mr. F. W. Thompson, of Montreal.

The Provincial Royal Jubilee Hospital of Victoria, B. C., treated 144 patients during the month of August.

The Vancouver General Hospital has appointed an active staff of twelve practitioners and a consulting staff of five.

GENERAL.

Foreign Appointments.—Professor Lorrain Smith, of Belfast, and Dr. A. S. Grünbaum, of Liverpool, have been appointed to chairs of pathology, respectively, at the Universities of Manchester and Leeds.

Maryland School Bequest.—The courts have confirmed the bequest of $40,000 made by the late Dr. William H. Crim to the University of Maryland School of Medicine.

A New Library for Cooper Medical College.—The Cooper Medical College, of San Francisco, has received a bequest from Mrs. Pauline C. Lane, wife of the late Dr. C. L. Lane, which enables it to build a library.

Lane Lectures.—Dr. William H. Welch, of the Johns Hopkins University, has given the Lane lectures at the Cooper Medical College, San Francisco, his subject being "Infection and Immunity."

Dartmouth Medical School.—Among the new appointments are Dr. Percy Bartlett, A.B., Bowdoin, '92; M.D., Dartmouth, 1900; instructor in anatomy; Dr. C. C. Stewart, Pennsylvania, assistant professor of physiology; Dr. John O. Polak, lecturer at New York Post Graduate School and Long Island College Hospital, assistant lecturer on obstetrics.

Boston Items.—The addition to the Stillman Infirmary for an infectious ward is well under way; and in Boston the foundations have been put in for the new Medical School buildings of Harvard University.

Naval Medical School.—The Naval Medical School in Washington, began its regular course of instruction on September 30, with twenty student officers in attendance. The faculty of the school will be the same as last year, with the exception of Medical Director John W. Ross, who is on duty with the Panama Canal Commission. His place will be filled by Surgeon P. A. Lovering, who was recently detached from duty on the Asiatic station.

Officers American Academy of Ophthalmology.—At the Denver meeting of the American Academy of Ophthalmology and Oto-Laryngology, held August 24, 25 and 26, 1904, the following officers were elected: President, Dr. H. W. Loeb, of St. Louis, Mo.; First Vice-President, Dr. D. T. Vail, of Cincinnati, Ohio; Second Vice-President, Dr. Robert Levy, of Denver, Col.; Third Vice-President, Dr. Eugene Smith, of Detroit, Mich.; Secretary, Dr. Geo. F. Suker, of Akron, Ohio; Treasurer, Dr. Otto J. Stein, of Chicago; Councils, Dr. H. W. Loeb, Edw. Jackson, W. L. Ballenger, Casey A. Good, J. M. Ray, of Louisville. The next place of meeting will be decided upon by the Council and will be announced shortly.

Resolutions Concerning Death of Dr. Steinberger.—WHEREAS, We feel that in the untimely demise of our esteemed coworker, Dr. Victor Steinberger, we have lost a genial companion, an arduous worker, a progressive physician and an earnest and sincere colleague, therefore be it

Resloved, That we medical inspectors and trained nurses of the Department of Health, of the City of New York, Borough of Manhattan, at a special meeting held July 23, 1904, extend to his widow and to his family our heartfelt sympathy in the hour of their bereavement. May the remembrance of his affable personality, his conscientiousness in his duties, his devotion to his beloved ones and his uprightness of character serve to lighten their grief, to strengthen them in their affliction and be a blessed memory in the future. And be it furthermore

Resolved, That these resolutions, suitably engrossed, be presented to his widow and that a copy be published in the City Medical Journals. Jacob Sobel, M.D., Edward M. Thompson, M.D., E. Helen Knight, M.D., Otto A. Jahn, M.D., L. Marcus, M.D., Henry J. Blumensohn, M.D., and Thomas W. Neapsey, M.D., *Committee.*

Southern Medicine and Gaillard's Medical Journal, beginning with the October issue, are to constitute a consolidated journal. In negotiating the purchase of *Gaillard's Medical Journal* the editor of *Southern Medicine* has not been actuated solely by a desire to enlarge the subscription, though he does not claim to have been unmindful of the many advantages accruing from such an accretion. In 1897 the present editor of *Southern Medicine* established the *Georgia Journal of Medicine and Surgery*. On the first of January, 1904, *Southern Medicine* was thought to be a more appropriate name. *Gaillard's Medical Journal* was established at Richmond, Va., in 1886, by Dr. E. C. Gaillard, a Charlestonian, and a graduate, in 1854, of the State Medical College of South Carolina. Dr. Gaillard was a prominent surgeon in the Confederacy, and *Gaillard's Medical Journal* has always been considered a Southern journal, though for many years past it has been published in New York City. The records of both journals show them to have been harmonious in their aims and methods, and it is most fitting, therefore, that they should combine their several interests and resources to further those aims and improve those methods to the higher upbuilding of American medicine, and furthering the interests of the whole medical profession.

Professorship Fees in Germany.—According to the *Evening Post* the financial considerations involved in the calling of prominent men from one of the German universities to another are rarely made known. It is, however, reported semi-officially from Vienna that Prof. A. von Eiselberg of that university, called to succeed the famous surgeon König in Berlin, was offered a salary of 32,000 marks and guaranteed 25,000 marks in lecture fees. For family reasons, however, he declined this brilliant offer.

The Study of Medicine in Germany.—We learn from the *Evening Post* that a remarkable document has been sent by the executive committee of the National Medical Association to the 482 gymnasia and 131 Realschulen of the empire, with an urgent request for distribution among the graduates. It is an official appeal *not* to enter upon the study of medicine. The chief reason is the deplorable financial condition of an exceedingly large percentage of physicians. The determining facts adduced are (1) a surplus of medical men much beyond the demand; (2) the abrogation of the laws against practise by the incompetent; (3) legislation for the Krankenkasse. The increase in the number of physicians has been enormous, from 17,728 in 1876 to 24,225 in 1887 and 29,133 in 1902. The number has more than doubled in a single generation, and the prospects are that the "learned proletariat" in this department will grow still more in the next year, since women and the graduates of the semi-classical Realgymnasia are now admitted to the protession. A further reason for avoiding this study as given by the circular letter is the fact that the addition of a "practical" year to the course has made the expenses of preparation, already very costly, still more so.

International Medical Congress.—The fifteenth International Medical Congress will convene in the last week in April, 1906, in Lisbon. The preliminary program arranges for fifteen sections. The official language of the convention will be the French, but German and English will also be permitted in both the general meetings and in the sections.

Governmental Monopoly of Opium.—Entirely commendable is the action of the commission appointed by Secretary Taft in recommending control of the supply and sale of opium by the Philippine Government. This conclusion was arrived at after complete and careful study of the use and abuse of opium in Japan, China, Java, Formosa, and the Straits Settlements. The commission states that the use of opium in the Philippines does not at this time constitute as grave a social danger as it does in China and other neighboring countries, and on that account it is all the more important to stamp out the evil if possible, or to check it and restrain it within bounds. The Filipinos are becoming addicted to the use of the drug through its importation by the Chinese, 70,000 of whom are making every effort to propagate their nefarious business in the islands. In considering how best to control and check this traffic the commission considered five methods of action: High license, local option, farming, prohibition, and a monopoly, and decided that the last named was the practical way of dealing with the evil. All of these methods have been tried in the various countries visited by the commission and have been found wanting, the monopoly, however, in a less degree than any of the others. In Spain the farming system has been used solely for revenue purposes, a procedure which the United States does not consider justifiable from any standpoint. As for prohibition, its attempt among an Oriental people, many of whom are Chinese, would be quite as useless as is the effort among certain Occidentals to control the use of alcoholic beverages,—simply to encourage the evasion and transgression of unwise laws. The proposed registration and licensing of chronic opium smokers ought to have a decided deterrent effect on those who have not yet become habitués, realizing how hopeless these are, in so far as radical methods of treatment go on so vast a scale as would be required. As a corrective and educative measure all Filipino opium habitués are to be deprived of the right of franchise, and to be ineligible for any public office, municipal, provincial, and insular. Gratuitous treatment of all habitués wishing to free themselves from the opium vice is to be provided in the hospitals at Government expense. The method seems entirely rational and, in the light of knowledge and expediency, is the only fairly reasonable way of coping with the great curse of the far East.

Study Room and Book Psychology.—We quote with sympathetic feelings an editorial from our distinguished contemporary, the *Evening Post*. Speaking of the type of "Chair Sociologists," an apparently rampant type, they say: "The proper study of mankind is never without its enthusiastic votaries. Of late years, however, it has taken on more and more the sta-

tistical form. The philosopher of to-day has scant sympathy with such an idea as Emerson's, that every man carries in hieroglyphic the answer to those inquiries he would put. The inquiries the modern man would put he thinks to get answered by hunting up two hundred specific cases, classifying them, and concluding that truth lies with the division having the numerical preponderance," which, may it be interpolated, they label the "Normal Man." "It was in this wise that a pedagogical expert, if we recall the feat correctly, conducted experiments in the development of the artistic sense. After testing some thousands of infants with some hundreds of pictures, he announced to the world the surprising conclusion that young children preferred colored pictures to black and white. The Pauline maxim, "Prove all things," is, in this sense, of proving what everybody knew before, sadly overworked. We have heard, for example, the story of a prominent professor, an authority on child study, whose youthful son, reared though he was in accordance with the latest discoveries, proceeded to bombard a dinner guest with buttered biscuits. The first missile the guest received in silence, seeing that the family paid no attention to the occurrence. When the second caught him on the spotless shirt bosom, however, he opened his mouth to protest, but was interrupted by his hostess, who held up a warning finger, saying, "Hush, the professor is observing him in his wrath." From our inner consciousness, and such exhibitions as have come incidentally under our notice, most of us know, or think we know, what a person does when he is angry. But the careful scientist notes that he throws buttered biscuits. He would delight to compare this observation later with the case of another person who hurled a plate of soup. A Beloit College professor is the latest example of seeking wisdom in numbers. He has spent the summer pushing a wheeled chair over the St. Louis fair grounds, and from that "favorable viewpoint" studying the crowds and individuals there to be seen on parade. Sociology is the most wonderful of sciences, as we all know, but the question at once arises, "Why is the back of a wheeled chair an especially favorable place for studying it?" The investigator who lives for six months in a Bowery lodging house, spends the summer as a tramp, or digs in the subway, can at least say that he had a chance to know and observe people whom he would not have known and observed had he stayed at home. He can write a book about these people. Sometimes he can make it a very interesting book. The Beloit professor, however, has no such advantage. He has been observing all summer the backs of the necks of people whose faces he might have gazed upon if he had been strolling about the grounds wearing a silk hat and swinging a cane. It is hard to escape the conclusion that he could have studied them even better that way. When wheeling a most uninteresting subject, he may see a "type" full of suggestion, just turning the corner. He would follow if he were free, but in his menial station he must go on propelling the dull and humdrum while the exceptional slips away. Then, in any case, the people at the fair do not constitute a class or social group. They are a little of everything. Probably a hundred or so come from Beloit, and the professor could have scrutinized them from his study window. Students of the St. Louis crowds have already made one observation which really throws light on human nature. They have found a brisk demand for rented crutches among sound and sturdy men who are ashamed to let themselves be seen in a wheeled chair unless they display some ocular proofs of infirmity. That fact was first noted not by a trained observer, but by an ordinary pedestrian with no special mission. If our chair-wheeling psychologist makes other discoveries of equal value his summer will be well spent. Yet we cannot put away visions of the statistical method. "Of a half-hundred visitors who were charged five cents for a drink of ice water, exactly fifty manifested indignation." That has the merit of infinite pains to prove a useless fact which everybody might have known beforehand. Or we might get a better index to the crowd's mental condition from reading, "Of 817 persons who were shown Minnesota's butter statue of Father Hennepin discovering the Falls of St. Anthony, 43 showed pleasure, 112 evinced symptoms of actual dislike, while 662 were apparently affected in no way whatever."

OBITUARY.

Prof. Dr. Niels Finsen, the noted therapeutist, died September 24, 1904, at Copenhagen. Dr. Niels Finsen came into public notice for his discovery of a light cure for lupus, or tuberculosis of the skin, and other skin troubles. It has been known for a long time that sunlight is beneficial in such complaints. Finsen sought for the principle which makes sunlight fatal to germs, hoping to provide a cure which would operate on cloudy days and would intensify the properties of sunlight. He declared that he had found this principle in the violet and ultraviolet rays. He perfected an electric apparatus which shut out all other rays but these. With it was combined a most ingenious cooling apparatus. The Finsen rays have more than justified the faith of their discoverer in the treatment of lupus, but in other lines the results have not been encouraging. On the strength of his discoveries Dr. Finsen received the Nobel prize in 1903. This prize is given every year to the person who has done the greatest work for the advancement of mankind.

Dr. John J. Mackey, a well-known Brooklyn physician, died last week at his home at Bergen Beach, after a protracted illness. He was born in Dublin, Ireland, and when sixteen years old he entered the Medical School of the Dublin Catholic University, coming to this country a few years later with his parents. He was graduated from the Bellevue Medical College.

Dr. George S. Conant, fifty-one years old, died at his home, No. 148 East Eighteenth street, New York. He had been a sufferer from diabetes for many years. Dr. Conant was a graduate of the Bellevue Medical College.

Dr. John Purcell, eighty-six years old, died at Larchmont, September 26, at the home of his daughter, Mrs. Dowdney. Dr. Purcell was born in Ireland, and was for thirty years a well-known physician of New York City.

Remarks on Adenoid Vegetations.—Swelling of the cervical lymph glands is frequently the result of a disease in the pharyngeal tonsils, and it is not essential that both conditions should be due to scrofula. W. Lublinski (*Berl. klin. Woch.*, July 11, 1904) calls attention to the fact that the enlargement of the pharyngeal tonsil need not be so far advanced as to produce mechanical obstruction, but even a moderate degree of proliferation may call forth symptoms. These consist especially of extension of inflammatory processes into neighboring organs, such as the palatal tonsils, ears, eye and nose, which cannot be accounted for on mechanical grounds alone. Mention is also made of the chronic, constantly recurring form of cough, which accompanies adenoid vegetations and which he thinks is due to the dropping down into the larynx of secretions. Continuous febrile conditions are also associated with this condition.

SOCIETY PROCEEDINGS.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Seventeenth Annual Meeting, held at St. Louis, September 13, 14, 15 and 16, 1904.

The President, Walter B. Dorsett, M.D., in the Chair.

Address of Welcome, on behalf of the St. Louis Obstetrical and Gynecological Society, was delivered by Louis E. Newman.

David R. Francis, President of the Louisiana Purchase Exposition, followed the remarks of Dr. Newman by an interesting and instructive address.

Responses to these addresses of welcome were made by Dr. L. H. Dunning, of Indianapolis, Ind., and Dr. Herman E. Hyde, of Buffalo, N. Y.

Operative Treatment for Painful Menstruation in Young Virgins.—A paper with this title was read by Dr. William A. B. Sellman, of Baltimore, Md. The author pointed out the great necessity of giving relief to young unmarried women who suffered from painful menstruation. The means employed should not be of a character to unsex the patient or prevent her from bearing children or from fulfilling her marital relations. The operation should not be one which will endanger life or interfere with the woman's general good health. To illustrate the condition and to demonstrate the manner in which cases could be operated upon without unsexing the individual, and giving absolute relief from the suffering experienced, the author related a case upon which he operated the early part of June, 1904. The patient, Miss H., aged twenty-four years, a brilliant vocalist with a register of three octaves, had been unable to use her voice with any satisfaction for a long period on account of the pain developed in the ovarian region when attacking the high notes. June 7, 1904, under ether anesthesia, the author curetted the endometrium, removing a quantity of congested tissue from the cavity of the uterus. He then made an abdominal incision in the median line, and found both ovaries hyperemic and distended. Upon the left side he opened three good-sized cysts and upon the right side two medium-sized cysts. The Graafian follicles in each ovary were distended. He enucleated these with a sharp spoon curette, and scraped the walls of the cysts in order to destroy the germinal membrane. He then closed these openings with catgut sutures and used the same material with which to close the opening in the abdominal wall. The patient made an uninterrupted and rapid convalescence, and had not had the slightest amount of pain in the ovarian region, and no pain during the menstruations which she had passed through, since the operation. He thought very many gynecologists would have removed both ovaries under these conditions, and the result would have been the unsexing of the patient and probably the loss of her voice, especially in the upper register. Her voice had not been impaired in the slightest degree by the operation. The author showed three sizes of reamers devised by himself, which he had used for ten years in overcoming the condition of stenosis or obstruction where every other means failed. In not a single instance, when handled properly, had he witnessed any injury inflicted by them.

Dr. Herman E. Hayd, of Buffalo, New York, alluded to the importance of examination of these cases, and said even after an examination was made one might find that the most distressing cases were the ones that practically had no evident pathology. On a previous occasion, the speaker said, he read a paper on this subject in which he pointed out that retrodeviation of the uterus was responsible for much of the dysmenorrhea in unmarried women. If one upon examination should find a retroverted uterus, a prolapse ovary, a tender, sensitive tube, then there was a rational basis on which to work, but simply because a woman had a small os it did not follow that she was going to be the subject of dysmenorrhea, because it all probability most of these cases were simply due to an impoverished condition of the whole system. They were simply functional troubles, and had to be met accordingly. If, however, there was an obstructive dysmenorrhea, where there was a pinhole os, and usually these cases were associated with a congenital atrophic condition of the uterus, the small undeveloped uterus, probably one could institute some operative measures, and the interference which had been most successful in his hands had been dilation and the wearing of a stem pessary.

Dr. William H. Humiston, of Cleveland, Ohio, stated that dysmenorrhea was a common disturbance, and yet he had been unable to find a case that was not accompanied by an inflammatory condition of the mucosa. He had seen cases of narrow, conical os, with the patients menstruating without the least sign of distress, but the moment there was an inflammatory condition of the mucosa added to that, that moment the patients began to have painful menstruation. In cases of this kind he thoroughly dilated the uterine cavity, curetted, and had the patients wear an Etheridge pessary, closely watching them for several months, and if there was no accompanying disease of the appendages, the cure was decided and complete. But in these cases occasionally one would have a failure because he did not recognize an ovary which was smaller than normal, the cirrhotic ovary, which was hard to detect unless an examination was made under an anesthetic, and there was no relief afforded except the removal of these shriveled, corrugated, smaller than normal, ovaries.

Dr. D. Tod Gilliam, of Columbus, Ohio, spoke of the undeveloped condition of the uterus as a cause of dysmenorrhea. A great many men had come to the conclusion that it was not a superficial condition; it was not produced by the condition of the uterine mucosa, as a rule; it was not the result of stenosis of the internal os, but was due to the undeveloped, unripe condition of the uterine tissues.

Dr. Sellman, in closing the discussion, stated that he did not use his instruments in all cases, but only in a certain class. He would not use them in a case in which the dysmenorrhea was brought about by an inflammatory condition, but only in those cases where a gristly condition existed.

Pseudomembranous Monocystic Tuberculous Peritonitis.—Dr. H. W. Longyear, of Detroit, Mich., in a paper with this title, after defining this condition, reported three cases of the affection, and stated that the treatment consisted of abdominal section, with evacuation of fluid and the thorough washing out of all shreds and gelatinous masses with normal salt solution; thorough drainage by glass or rubber tubes, both abdominal and vaginal. This was to be followed by after-treatment consisting of frequent lavage, with a weak aqueous solution of iodine (tincture iodine, 1 dram; water, oi), until the pseudomembrane was disintegrated and the purulent discharge which followed had ceased. Internally, the rational treatment of tuberculosis, consisting of the use of creosote, cod-liver oil, etc., a supporting diet, and suitable hygienic surroundings. The prognosis was bad, al-

though a few cases might recover, if not too far advanced, after months of constant drainage and careful nursing.

Chronic Adhesive Peritoneal Sclerosis.—Dr. N. Stone Scott, of Cleveland, Ohio, stated that among the rarer abnormal conditions found within the abdomen, was one particularly interesting, and possibly more frequent than had hithertofore been suspected. This condition was progressive, yet was characterized by an absence of active symptoms, including ascites. In the early stages the peritoneum was rigid and contracted; later the connective tissue became excessively hypertrophied, with adhesions between the involved peritoneum and all viscera with which it came in contact. As soon as these adhesions interfered with the functions of any organ, symptoms referable to such interference supervened. When the involvement prevented some important organ from performing its necessary functions, death ensued. In an illustrative case cited by the author, only a circumscribed portion of the pelvic peritoneum was affected.

Relative Value of the Means and Methods Employed in Accouchement Force.—Dr. E. Gustav Zinke, of Cincinnati, Ohio, read a paper with this title, in which, after epitomizing the various views gleaned from the literature of the subject, he drew the following conclusions: (1) The graduated steel or vulcanite dilators and the ordinary branched or bladed dilators were mainly employed for the purpose of dilating the cervix or os preparatory to digital manual and bag dilatation. (2) The bag or hydrostatic dilators, of which the Champetier de Ribes balloon and its modifications were the most favored, should be employed only when time was not an important element in the case; when the cervix was thoroughly softened, partly or entirely effaced, and an easy introduction of the balloon possible. This form of hystereurysis was contraindicated in central placenta previa, and in eclampsia, mild or severe. If, in these cases, it was determined to empty the uterus, deep cervical incisions, vaginal or abdominal hysterectomy, promised the best results for mother and child. To prevent continuation of the cervical incision, a suture might be placed in the upper angle of the wound. (3) The manual dilatation of Harris and the bimanual (digital) dilatation of Bonnaire and Edgar. A soft and partially obliterated cervix and dilatable os were absolute prerequisites for this variety of uterine dilatation. It was to be preferred to hydrostatic hystereurysis when time constituted an important element. Under this method the life of the fetus was often lost and, unless great care was observed, sepsis, lacerations, hemorrhage, profound shock and sometimes even death of the mother might occur. (4) Deep cervical incisions and Duhrssen's vaginal hysterotomy were destined to play a permanent and important rôle in the management of forced labors in the future. Many of the cases now subjected to manual or balloon dilatation would be treated by cervical incisions. It was the method in the presence of sepsis of the vagina, because the operation was short in duration and could be performed under a continuous flow of an antiseptic solution. An intact cervix, whether hard, elongated or not, was always an indication for cervical incision. Vaginal hysterotomy was indicated principally when the cervix was the site of malignancy or extensive cicatrization. If there were a palpable difference between passage and passenger, the conservative Cæsarean section should be the choice of operation. (5) The indications for the conservative Cæsarean section had been so well defined by himself here and in previous papers, that it was needless to repeat them. Cervical incisions and Duhrssen's operation would, however, take its place in many instances, notably in cases of marked prematurity. (6) The Bossi and similar metal dilators, if they were not entirely needless, they were certainly very dangerous instruments. From what had been said, it was safe to predict that rapid and complete metal dilatation would never become a popular method; that sooner or later it would receive universal condemnation and thus reach its final and well-deserved destination—the lumber room of obstetrical instruments.

Dr. Henry Schwarz, of St. Louis, was glad to hear the author's experience with refeţence to Duhrssen's vaginal Cæsarean section, because personally he had had no experience with that method. He fully agreed with all that Dr. Zinke had said, except that he (Dr. Zinke) appeared to be too radical in some respects. He could conceive of exceptional cases of eclamptic convulsions or of placenta previa, in which Cæsarean section might be justifiable in proper hands and under proper surroundings. As a rule, in eclamptic convulsions Duhrssen's method should be the one of choice, and there could be very few exceptions where conservative Cæsarean section was indicated. As to Bossi's dilator, it had a limited sphere of usefulness. He had used it successfully in one case.

Dr. James F. W. Ross, of Toronto, Ont., said he had done Cæsarean section three times, with the recovery of the mother in each case, and the loss of the child in each case. He gave reasons why the children were lost in these cases. The question between Cæsarean section and the Porro operation was pretty well settled, and the conclusion had been reached that the latter, when Cæsarean section failed, enabled one to control hemorrhage. He had operated on two cases of rupture of the uterus, with recovery in both instances, after having performed the Porro operation, using gauze packing, and he thought this operation in these cases should not be adopted except for uncontrollable hemorrhage.

Dr. J. Henry Carstens, of Detroit, Mich., emphasized the point that many practitioners were too anxious to dilate the cervix in the class of cases under discussion. He had seen them use rubber dilators and dilators of all kinds in working around the uterus, for two or three days at intervals, and then finally had to send for some one to help them out of difficulty, or they had to call in counsel. It was a mistake to suppose that because a woman had a little pain at the approach of labor that she was actually in labor.

Dr. Zinke, in closing the discussion, said that whatever he may have said or written in the past on this subject and presented to-day came from a motive simply to do good in the future, and to get rid of a certain method of practice in obstetrics which had been the means of rendering families unhappy, and because he honestly believed that there was great room for improvement in this practice in spite of all that had been said against it.

Vaginal Cæsarean Section in Grave Cases of Puerperal Eclampsia.—Dr. J. Henry Carstens, of Detroit, Mich., said that mild cases of puerperal convulsions could be ordinarily controlled by the treatment generally advocated for this class of cases, but there was a serious grave form of puerperal eclampsia where one convulsion followed another in quick succession, and the patient finally died in spite of ordinary, and sometimes even heroic, treatment used.

This severe variety of eclampsia could generally be subdued by immediate delivery. This was accomplished generally by manual dilatation, the use of powerful steel instruments, like that of Bossi, but what was better still was the operation called vaginal Cæsarean section, which enabled the obstetrician to deliver the woman in about five minutes with little or no danger. In conclusion, he stated that (1) in grave puerperal eclampsia, as a rule, prompt delivery will save the patients. (2) That manual effort with the fingers and the hand was too slow. (3) Powerful steel dilators were not always at hand, and often caused serious injuries. (4) Vaginal Cæsarean section enabled the obstetrician to quickly and safely deliver the woman.

An Unusual Case With Many of the Symptoms of Appendicitis.—Dr. Magnus A. Tate, of Cincinnati, Ohio, narrated this case. The patient, a boy, aged seven years, was attended by Dr. L. Linss, of Cincinnati, for an ordinary attack of scarlet fever, from February 25 to March 18, 1904. March 21, Dr. Linss was called to see the boy on account of a swelling of feet and hands. On the morning of April 1, all edema had disappeared; urine highly colored, but normal in quantity, with no sugar, albumin or casts. That afternoon the patient had a chill, vomited and was suffering with a pain in the abdomen; temperature 99.5°. Pulse 90. April 5, the patient had two more attacks of vomiting; pain in the abdomen was constant, and he had not slept for twenty-four hours; temperature 102° F. and pulse 130. Dr. Wm. Johnson saw the case with Dr. Linss, and upon examination of the abdomen they found an uneven swelling which extended to the umbilicus, and over the right lumbar region. Upon palpation exquisite tenderness over the appendix was elicited. A diagnosis of appendicitis was made, but further consultation was asked for. The next day, April 6, Dr. Tate was called. When he saw the patient, six days after the initial vomiting spell and chill, the child had been crying and moaning day and night, and could not sleep; temperature 102° F.; pulse 132; very irregular; abdomen swollen, especially on the right side, and such marked tenderness that the child screamed if the slightest pressure was made over the region of the appendix. Bowels constipated and the urine highly colored. The following day there was no improvement, the pulse even worse; temperature remained at 102° F. Before placing the child on the operating table, a bed-pan was placed under him and he passed nearly a pint of urine. Chloroform was administered, and an incision was made on the right side two inches in length, over the most prominent portion of the swelling. It revealed a dark-colored sac and a number of adhesions. The incision was lengthened to three inches; some adhesions were broken down with the finger, but a few of them were so firm that they had to be cut. The enlarged opening gave a field of about two inches to work in, and the sac in appearance was not unlike that of a gangrenous bowel. They were at a loss to say exactly what it was, and as adhesions limited the field, gauze was packed about the opening, the child turned to the right side, and a half-inch cut was made into the sac. A dark-green fluid spurted out, which had a strong heavy odor of stale urine. About two quarts of fluid was evacuated, and the finger introduced into the sac, which proved to be the bladder. The opening in the bladder was sewed up, adhesions binding the bladder on to the abdominal wall and on the right side to the large and small intestines were broken up, and the enlarged thick-walled bladder dropped back into the abdominal cavity. The appendix and appendical region, except for the presence of some adhesions, were normal. An opening was left in the abdomen for gauze drainage, and the rest of the wound closed up. The subsequent history was that the bladder was emptied by means of a retention catheter for forty-eight hours; after that catheterization night and morning for three days. There was a gradual decrease in pulse and temperature, and in seven days both were normal. On the third day a quantity of fluid drained out through the opening, but this gradually ceased, and on April 23, sixteen days after operation, the abdominal wound had closed, and the patient was now in good health.

Gunshot Wound of the Abdomen.—Dr. John D. S. Davis, of Birmingham, Ala., reported a case of gunshot wound of the abdomen, with eighteen perforations, in which he resorted to intestinal resection of five feet, seven inches, with use of metal button, followed by recovery of the patient. The patient, a woman, twenty-three years of age, while attempting to place a rifle in the rack on the wall, the gun was discharged with the muzzle about eight inches from the abdomen. The bullet, a 32 caliber, entered in the median line midway between the umbilicus and the symphysis pubis, ranging backward, upward and to the right, and was deposited in the muscles of the back on the right side. The ball in traversing the abdomen, made eighteen perforations of the gut, and two cuts in the intestine that went to the mucous membrane. Sixteen of the perforations and the two sero-muscular wounds were in the small intestine, and two perforations in the transverse colon. The bullet cut two mesenteric arteries which caused a large amount of blood to collect in the abdomen. Patient was shot at 4:30 o'clock in the afternoon, February 2, 1904, and was brought a distance of eighty miles on a freight train to Birmingham, by her physician, Dr. W. O. Watson, and carried to Hillman Hospital. At nine o'clock the essayist saw the patient and had her prepared for section. Temperature at this time was 102° F., and pulse 130. She probably had fever at the time she was shot. A seven-inch incision was made in the median line, a large quantity of blood turned out, and the bleeding vessels controlled by hemostatic forceps. The two perforations in the transverse colon were so near the mesenteric border that he stripped up the mesenteric serosa and turned the mesenteric border in as though the two openings, one on each side, had been one large opening, including mesenteric border, and closed with interrupted silk sutures. He then brought the mesenteric folds back and sutured over the wound. Four perforations and two sero-muscular cuts in the small intestines were turned in and closed with small loop silk sutures. Two perporations were situated so close together that they had to be closed by flexing, pouching or looping the mesenteric border, the bowel being bent on its convexity so the two wounds could be closed as one large wound by interrupted longitudinal loop sutures,—suture with axis of bowel. There were two other perforations that could not have been closed by suture, but the openings were between the mesenteric perforations on one side, and eight on tne other, and he thought it better to lose one more foot of intestine than to do two resections. He resected that part of the intestine containing the ten mesenteric perforations (67 inches), including the two large perforations in the convexity of the ileum and closed with the third sized metal button. The resected bowel and its mesentery were removed, the vessels

ligated, and the gap in the mesentery closed with interrupted silk sutures. The abdomen was flushed with hot normal salt solution; plain gauze drainage was used, and the abdomen closed with through and through silkworm-gut sutures. The operation lasted one hour and a half. Drainage was removed on the second day. Patient passed the button on the twenty-first day, and left the hospital March 1, 1904. A week later she was doing housework, and was now perfectly well. Dr. Davis also exhibited the metal button which was made in four sizes, like the Murphy button, with the exception that it had no spring. In his opinion, the spring served no good purpose, was an additional expense, and made the button more difficult to apply.

He also showed a metal horseshoe button which he had made to take the place of his catgut horseshoe plates, which he had been in the habit of using to close large wounds on the convexity of the bowel without destroying the mesenteric border by resection.

Clinical Reasons for Advising Early Operations in Fibroid Tumor of the Uterus.—Dr. Rufus B. Hall, of Cincinnati, Ohio, discussed this subject under three heads: (1) Which cases should we advise not to be operated? (2) In which cases should we advise late operations? (3) In which cases should we advise early operations?

The author discussed at some length the clinical history of patients in order to form a correct conclusion.

1. If a patient between thirty-five and thirty-eight years of age, suffering from a fibroid tumor of the uterus, the tumor and uterus combined making a mass not larger than a cocoanut, had no symptoms other than profuse metrorrhagia, the whole period not extending over five or six days, and she was free from pain except at her menstrual periods, it would be wise and judicious not to interfere surgically. But this patient, during her entire menstrual life, should be considered an invalid by her physician and should report to him at once if her symptoms became aggravated.

2. If she suffered pain in one or both iliac regions at other times than at her menstrual periods, the cause of the pain should be discovered at once and corrected. On the contrary, if her menstrual period was prolonged to ten or twelve days, the loss of blood amounting almost to a hemorrhage, and this hemorrhage could not be controlled or mitigated by the usual internal medication, and rest during the period, the advisability of an operation should be considered.

3. Prolonged and severe uterine hemorrhage had not been considered a sufficient reason for advising an operation. A patient suffering from a tumor as large or larger than a cocoanut, who had profuse bleeding at each menstrual period and the period was prolonged for eight, ten or fifteen days, as it frequently was, was in considerable danger. It was the author's experience that a large majority of those patients in whom the hemorrhage could not be controlled by medicinal remedies in two weeks, came to operation sooner or later. They could frequently stand off the operation two or three weeks, or in some instances longer, but the anemia was profound, and if some complication arose in the tumor, ovaries or tubes, making an immediate operation necessary, they were in the worst possible condition for it. The chances for a successful operation were greatly diminished. Therefore, when the hemorrhage could not be controlled within a few months, these patients should be advised to have the operation made before the anemia was pronounced. These symptoms, however, were not of so much importance as others, but if permitted to continue for many months they caused profound anemia and lowered vitality, and a high mortality followed the operation. He regarded hematoma, complicating these tumors, as the gravest complication the surgeon had to deal with in the management of the late cases. His records showed that only one patient in seven operated upon for fibroid tumors, where pus tubes were present, developed peritonitis after the operation; while five in every six of those operated upon in which hematoma of the ovary existed, suffered from peritonitis following the operation for removal of the tumor. The speaker had notes of one case of a woman suffering from a fibroid tumor about the size of a cocoanut, who ceased to menstruate at forty-seven and all symptoms attributed to the tumor disappeared. He removed the tumor when she was thirty-six years old, after it had been causing trouble for six months, and it had malignant disease well advanced in it. Other similar cases were cited. His experience in removing these malignant fibroid tumors had been that within a year or two after the operation for removal of the tumor, the patient had a recurrence of malignant disease in the pelvis and abdomen, and succumbed within a few months.

Shall We Remove All Fibromata of the Uterus on Diagnosis?—Dr. Thomas B. Eastman, of Indianapolis, Ind., read a paper with this title. After quoting freely numerous writers on the subject of the removal of fibroid tumors, the author stated that in the 117 cases upon which he had operated for fibroid tumor of the uterus, complications which bade fair to result eventually in death were encountered in 43 cases. Hydrosalpinx, either unilateral or bilateral, five times; suppurating dermoid cyst, three times; sarcoma, once; parovarian cyst, once; necrosis of tumor, eight times; cystic degeneration of ovaries, three times; ovarian cyst, four times; intraligamentous development of fibroid, three times; pyosalpinx or salpingitis, seven times; hematosalpinx, once; cystic degeneration of the tumor, once; myxomatous degeneration, three times; adeno-carcinoma of body of uterus, twice. Among the more prominent complications, appendicitis was encountered once. In addition to the complications inherent in the uterus and its adnexa proper, there were those arising from the pressure of the mass upon the bladder, rectum, ureters, and the persistent anemia resulting from prolonged hemorrhages. In the writer's 43 complicated cases, as well as in those of other writers on this subject, it was a significant fact that those complications which were inherent in the tumor, and which presaged the most certainly fatal results, were those of such character as to preclude a positive knowledge or ofttimes even a suspicion of their existence prior to operation or even a microscopical examination. This, then, was the arraignment of the uterine fibromyoma, and in the mind of the author justified their removal in all cases, except in so few as to scarcely merit attention. Should not all fibromata be removed upon diagnosis, not for the harm they were now doing, but against the harm that they might do in the future? As far as the danger was concerned, the removal of a fibroma was attended with as little danger as the average abdominal section, and he was not unmindful that the removal of the uterus from a comparatively young woman was not a thing to be lightly considered. The results obtained by various operators warranted

one in classing it among the safe operations, the mortality being in the hands of skilled men scarcely more than five per cent., a mortality certainly much less than would result from the policy of procrastination, which advocated delay until the forces of death plus those of the operation outweighed those of surgical interference. There was nothing so innocent as an innocent fibroid, and nothing so treacherous. When one considered the dangerous conditions into which an innocent fibroid might quickly change itself, and the ease and safety to the patient with which this innocent fibroid might be removed, the writer believed that the deduction was evident that all fibroid tumors of the uterus should be removed upon diagnosis.

Removal of Skeleton of Ectopic Fetus, Ulcerating Into Bladder, by Vaginal Cystotomy.—Dr. William D. Haggard, of Nashville, Tenn., reported the case of a white woman, aged thirty-one years, the mother of two children, who presumed herself to be normally pregnant and expected to be confined August 30, 1900. There was a continuous flow from the uterus for the first three months, and she had pain in the bladder and straining on micturition from the beginning of conception; but there was no history of rupture of the ectopic gestation. On June 20, at six and a half months, while lying down, she felt motion for the last time. Previously it had been unusually vigorous, more so than with her two other children. She was confined to her bed for three or four weeks with pain. She had more or less pain for about a year and she was a semi-invalid from weakness, pain and tenderness in lower abdomen. The enlargement of the abdomen had gradually, but appreciably, diminished. At the end of a year, pus first made its appearance in the urine, and the first day after getting up a bone, which was a fetal vertebra, made its exit through the urethra. During the second year she had been able to attend to all household duties, but occasionally would have several days of unusual bladder irritation, and pass a bone through the urethra. In the last four months she had passed all the long bones. Sometimes one would catch in the urethra. She would get hold of the free end and gradually pull it out. Commonly several days of comparative comfort would elapse before another one would set up irritation, and finally escape. In this way she passed eighty-five bones. Six weeks before admission to the Infirmary she felt the discomfort of another bone, and had not been free from it since, nor had any bone passed. She had been in bed two weeks with pain in the lower abdomen, which was very intense on motion.

Upon examination, the bladder was exquisitely tender, crepitated upon pressure. Bones were covered with phosphatic deposit. She described a small lump to the right of the median line and low down, the remains of the once six and a half months' enlargement, but this could not be made out on account of tenderness. The urine was loaded with pus and phosphates, and exceedingly offensiveness. Curiously enough, the woman did not void it oftener than every six or eight hours. Micturition was very painful and after the urine was voided, free pus was often expressed.

Under ether, October 31, 1902, the index finger was made to enter the urethra without much effort, and detected numerous bones, and communicating with the bladder, an opening into a lesser chamber on its right upper surface. There was a mass on the right to be made out bimanually, about as big as a small orange, and communicated with the bladder much as a bow window with partially drawn curtains did with a room. The uterus was retroverted and not much enlarged. The bones were much too large to be removed through the urethra, and an incision was made into the vesicovaginal septum. The finger in the bladder through the urethra located the bone, and it was withdrawn with a forceps introduced through the incision. In this way fifty-two bones were removed. Some were embedded in granulation tissue in the remains of the ectopic sac, and were with difficulty removed. The sac and bladder were freely irrigated, and an artificial vesicovaginal fistula established for drainage, after Emmet's method of sewing the vaginal mucosa to that of the bladder by silver-wire sutures.

The operation, while tedious, was not attended with shock. The bladder was irrigated twice daily afterward with boric acid solution, and the urine soon became normal. At the end of six weeks the artificial vesicovaginal fistula was closed successfully by silver-wire sutures. A cystoscopic examination with the Bransford-Lewis uretercystoscope revealed a healthy mucosa, and at the site of the former communication, only a slight reddish depression was seen. The ureteral catheter failed to disclose any depth to this aperture, and the patient was discharged eight weeks after the operation, and has remained well since.

Presidential Address.—Dr. Walter B. Dorsett, of St. Louis, Mo., President of the Association, stated that in casting about for a subject upon which to address the Fellows, he had for consideration the various operations for the relief of retrodeviation of the uterus. He spoke of the excellent operative work which had been accomplished within the past few years, so that what he had to say was more of a resumé of what had been done surgically. He discussed the methods of operation, saying that the different plans of accomplishing the reposition of the uterus might be classified according to the route selected by the advocates of each. They might be divided into extraperitoneal, vaginal, and intra-abdominal. After considering and discussing exhaustively the different methods in vogue, and indulging in some criticism of them, he stated that some of the methods did not merit the prominence they had obtained in the estimation of the profession at large, and for the reason that no one could arrive at a proper conclusion as to the best method of relieving the suffering woman without a careful study of the different methods. If one operation was in accord with the accepted idea of proper surgical technic, the other certainly was not. When one considered the great diversity of opinion as to which was right and which was not, without a proper appreciation of them all, one was certainly at a loss as to the choice of operations. In his opinion one should not consider any operation that did not contemplate the possibility of a thorough inspection of the adnexa from above the pubic bone. He would discard the entire class of operations that contemplated vaginal incision, either anteriorly or posteriorly, on account of the greater liability of sepsis as well as from the impossibility of anchorage to firm structures. While ventrosuspensions and ventrofixations had been condemned as unjustifiable, he took it that it was because only the fixation or suspension that was accomplished by anteverting the uterus and stitching the fundus, or, perchance, the posterior uterine wall to the abdominal wall, had been considered. It was reasonable to assume that this unnatural suspension or fixation was a causative factor in the production of lengthened adhesion bands for the entanglement of bowel as well as barrier to the proper development of the pregnant uterus. If, how-

ever, a lower segment of the anterior uterine wall was attached lower down on the abdominal wall, and omentum was allowed to drop to or behind the uterine fundus, the bugbears of necessary Cæsarean sections in labor cases and entangled bowel would be less feared. His own work in obstetrics and with this operation justified him in this statement.

Gunshot Wound in the Hip-Joint.—Dr. L. H. Laidley, of St. Louis, reported a case of gunshot wound of the hip-joint, but before doing so referred to the literature of the subject. The patient, aged eighteen years, a visitor and looker-on, of remarkably vigorous constitution and unexceptional health, was shot in a brawl on "The Pike" at the Exposition, on June 18. He was admitted to the Emergency Hospital, and within one hour an abdominal section was made. Upon examination, it was found that the ball had passed through the abdominal wall near McBurney's point, passing inward and slightly downward. On examining the viscera it was found that the ball had penetrated the cecum, making two openings, one in front and behind, passing down into the soft parts into the pelvis. These were closed by Lembert sutures, the abdomen cleansed of large quantities of blood and escaping contents of the bowel, and the abdomen closed with through-and-through sutures. The patient left the table within an hour under very favorable circumstances, the pulse being 72, temperature normal. The next morning he complained of great pain in the hip-joint, and was unable to move that limb. For ten days his condition was favorable, when he gave evidence of disturbance, especially about the joint. Chills and fever and increased pain suggested an examination with the X-ray, which would have been used earlier were it not for the fact that they had not been provided with such an appliance up to that time. On July 11, after the bullet was removed, an incision was made over the joint, disclosing the presence of pus outside of the joint, which was opened, showing that all of the head of the bone within the capsule was entirely destroyed and fractured; the acetabulum was likewise fractured and necrosed; following up the course of the cavity made by the bullet, the missile was removed, having lodged in the upper and outer margin of the cavity of the socket. The necrosed portions of this bone was chiseled out, and with a sharp curette were entirely lceansed, the dead portion of the head of the femur was also removed, the cavity packed with gauze and thoroughly drained. He afterward showed evidences of sepsis, which prompted the author on July 22, to reopen the wound, washing out the cavity, and introducing further drains. These were continually used up to the present time. About three weeks ago, the patient manifested evidence of acute nephritis. Upon examination it was found that he had a large quantity of albumin, with casts, which was evidently due to toxemia as found in scarlet fever. Since that time, by repeated cleansing of the cavity and thorough drainage, these evidences were disappearing, leaving the patient in a fair condition for recovery. The subsequent treatment would be to free the cavity and its surrounding structures of all suppuration, and by this means the author hoped to restore his patient to his normal health, probably leaving him with a shortening of the limb and perchance a degree of anchylosis. The patient was exhibited.

Strangulated Umbilical Hernia.—Dr. John Young Brown, of St. Louis, reported an interesting case of complicated strangulated umbilical hernia, and presented the patient.

Sterility Due to Retrodeviation of the Uterus and Its Treatment.—Dr. Herman E. Hayd, of Buffalo, N. Y., read a paper on this subject, in which he reported twelve pregnancies following the simple Alexander operation. Among other things, he stated that posterior displacements of the uterus were a very frequent cause of sterility. Pregnancy had frequently followed when such a uterus was placed in position, either by pessary or operative measures. He made an eloquent plea for the simple Alexander operation for a large class of suffering women who had simple uncomplicated retroposed uteri. In reporting the twelve cases in which pregnancy followed the simple Alexander operation, it was pointed out that the ligaments had stood the test of pregnancy and parturition. The canal was never opened *per se;* the internal ring and peritoneal cavity under no circumstances whatsoever. The author made a plea that the simple Alexander operation should be always employed for this special class of sufferers, in whom a pessary was not worn with comfort or willingly tolerated.

A Unique Case of Circumscribed Infection of the Placenta and Excessive Vomiting, the Cervix Uteri and Ovum Being Intact.—Dr. Albert Goldspohn, of Chicago, reported this case. There was a first pregnancy of three to four months with severe nausea, and much vomiting, almost from the beginning, with the gradual additional development of fever, and finally also severe chills and a scanty, foul discharge. There was no alteration in the shape and consistency of the cervix, or of the body of the pregnant uterus. The patient had a rapid pulse, and irregular, high temperature, and chills. The uterus was emptied. The membranes and ovum were intact. The edge of the placenta bore a circumscribed area of broken-down gelatinous tissue, with a very offensive odor. The author gave a brief review of the current views of the pathology of hyperemesis gravidarum and considered the rare etiological bearing of the above case.

Conservation of the Natural Resistance of the Patient in Surgical Work.—Dr. Robert T. Morris, of New York, in discussing this subject, said that the late Lawson Tait, was the first great exponent for conservation of the natural resisting force of the patient. Tait operated very quickly. He did as little as possible. He avoided handling viscera; he avoided disturbing the patient's mind with details of what he was about to do. He treated the most difficult case lightly, and patients looked at it in the same light. The repair of surgical injury depended primarily, secondarily and finally upon a proper hyperleucocytosis. The author used this term in a generic way to avoid elaboration of detail in statement. This was a manufacturing process carried on under the control and guidance of the sympathetic ganglia. The more the surgeon shocked a patient, the more he lessened the production of the leucocytes. The common ways for lessening the natural resistance of the patient were prolonged anesthesia, and unnecessary amount of anesthetic. All surgeons had seen patients who had been literally drenched with ether; they had seen patients carried to the danger line with chloroform. On the other hand, surgeons had watched the beautiful work of men who were expert in giving anesthetics, who began with nitrous oxide and a little oxygen, then changing to ether, who did it skillfully, quickly, nicely, and avoided shock which took away one element of resistance from the patient. Quick work was a point in which Tait excelled. Expeditious work conserved the natural resistance of the patient. Undoubtedly the resistance of patients was lessened in abdominal surgery with gauze packing. He said that if ten healthy policemen were taken from the street and a yard of gauze was introduced into the peritoneal cavity, those policemen the next day would not be in good condition. This being so, how could one expect a patient with septic appendicitis to be in good condition if a yard of gauze was

packed into the abdomen. If one drained quickly, got out of the abdomen quickly, disturbed the bowels as little as possible, made short incisions—in other words, leaving the patient alone as nearly as possible—he would make such a wonderful recovery that one might be accused of taking out a normal appendix. The tendency was to do too much.

If a surgeon pricked his finger in operating on a septic case, the surgeon died, while the patient recovered. Why was this? The patient was loaded with bacteria and toxins. The patient had called out all of his resistance factors; his hyperleucocytosis was under way ready to meet infection and bacteria. The surgeon had not called out his resistance factors, hence the bacteria proliferated rapidly and gained ascendancy. Was it necessary for the surgeon to get all of the septic culture media out of the patient's abdomen? No. All he needed to do was to turn the scale; there was a conflict between the bacteria and the leucocytes in that patient's case; the bacteria were winning; the leucocytes were losing. What did the surgeon do? By taking out most of the toxins and bacteria quickly, he turned the scale, turned the balance in favor of the leucocytes, and they went on and won. He took unfair advantage of them, but if he had labored conscientiously in accordance with text-books, and the best authorities, he would have put the patient out of commission where he should not have done it.

Officers for the Ensuing Year.—The following officers were elected for the ensuing year: President, Dr. H. W. Longyear, of Detroit, Mich.; Vice-Presidents, Dr. D. Tod Gilliam, of Columbus, Ohio, and Dr. John Young Brown, of St. Louis, Mo.; Secretary, Dr. Wm. Warren Potter, of Buffalo, N. Y., re-elected; Treasurer, Dr. X. O. Werder, of Pittsburg, Pa., re-elected; Councillors, Dr. James F. W. Ross, of Toronto, Ont., and Dr. Walter B. Dorsett, of St. Louis.

After the introduction and adoption of resolutions of thanks, the Association adjourned, to meet in New York City in 1905, the time to be fixed by the Executive Council.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON GENITO-URINARY DISEASES.

Stated Meeting, held May 18, 1904.

The President, James Pedersen, M.D., in the Chair.

(Continued from Page 624.)

Report of a Case of Suprapubic Bladder-Valve in a Case of Inoperable Carcinoma of the Prostate.—Dr. Ramon Guiteras reported the case of a man, sixty years old, who suffered from some stomach trouble for five years. He had had days when he vomited, was nauseated, had bad taste in his mouth, dizzy feelings, etc. He had no appetite and his sense of taste was lost, his bowels were constipated, he had pain in his back for weeks, and lost 15 pounds. He was placed upon suitable diet and his stomach treated with various medicines. After a few visits he disappeared. Six months ago he returned saying that when his stomach trouble returned he would take medicine and diet himself and he would then be better. In another month he had another return of his stomach trouble and complained of sour stomach, nausea and flatulency. Then he had pain in the back, diarrhea, desire to urinate five or six times during both day and night, and this was accompanied by pain and spasm. The pain and urinary symptoms kept up until the day of his visit. The abdominal examination was negative. The prostate was enlarged, indurated and extended to the right side. The urine was yellow, specific gravity 1,025, acid in reaction, no albumin, a few red blood cells, some pus and a few hyaline and granular casts. The residual urine was about two ounces. One or two weeks after there was incomplete retention, suprapubic pain, tenesmus and dribbling. Examination at the office showed sixteen ounces residual urine. The patient then went to some local physician who catheterized him three times a day. The residual urine decreased to six ounces and he was able to pass spontaneously three pints in twenty-four hours. A suprapubic cystotomy was performed and when the bladder was opened there was found a mass in the right side of the abdomen and the bladder wall infiltrated and it was evident that the growth could not be removed and, therefore, a Gibson operation was performed. A 33 Fr. catheter passed into the bladder and the fascia and skin was stitched around the tube. A No. 2 chromic silk was used for the upper layer and a No. 2 chromic for the floor and ordinary gut was used for the skin. Convalescence was uneventful. A catheter was tied in the urethra. It was two months before the valve seemed sufficient to permit the patient urinating through his urethra without leakage through the suprapubic opening, and during this time it was necessary to resort to a number of methods in order to see if he could not make the valve hold. The valve would not hold until it admitted a catheter not larger than a 15 Fr. The valve at this time was two and one-third inches in depth. Two months after he left the hospital and four months after the operation he voided seven or eight ounces of urine without leakage, but there was a residual urine of 12 ounces. Occasionally his bladder was washed out with nitrate of silver solution and kept on urinary antiseptics. Five months after the operation the patient died of an intercurrent pneumonia. The case was interesting to him at that time—six months ago—because he had another patient who appeared with symptoms similar to the one reported. In both cases there was a prostate affected with carcinoma and the prostates were about the same size. In each case he advised the introduction of the suprapubic valve because the growths were inoperable ones. In one instance the patient was operated upon, the prostate removed and the patient died within a few days. The other patient had the valve introduced and lived five months after the operation and then died of pneumonia. His experience in these two cases, coming on about the same time, led him to the conclusion that in cases of extensive malignant disease of the prostate it was better to perform the valvular operation than to attempt to remove the prostate by a prostatectomy.

A Modification of Syme's Staff for External Urethrotomy.—Dr. John Van der Poel presented this instrument, which was simply an enlarged tunnel sound with a curve, the sizes running to 24 Fr. The tunnel sound was enlarged to make a better guide in performing external urethrotomy, and acted better than the ordinary small-sized tunnel sound. It was very applicable in cases of extravasation. In doing Harrison's operation, this tunnel sound could be used either before or after the internal urethrotomy; it could be used as a staff upon which to cut. Dr. Van der Poel had found it particularly applicable in the clinical cases and at the dispensary where, with a very tight stricture, it was possible to pass a filiform and the tunnel sound over it. The size of instrument presented was No. 18.

X-Ray Tube for the Intrarectal Treatment of Tuberculosis of the Prostate.—Dr. Sinclair Tousey presented this tube, which was a modification of existing tubes with which were associated the names of Cossar in England and Cauldwell, Morton and

Cleaves in this country. The bulbous portion of the tube consisted of lead, glass opaque to the X-ray. In this there is no platinum disc, but a simple anodal wire at one side out of the way of the cathodal stream which was reflected from the concave aluminum cathode. This stream passed into a cylindrical prolongation of ordinary glass from which it emerged in every direction as diffused X-ray. This prolongation was cooled by an outer tube through which passed a continuous current of water. This portion of the X-ray tube was introduced into the rectum and was excited by a current of about four ampères for about three minutes. The heavily insulated conducting cords which were shown were stated to be a necessary part of the apparatus. The whole was held in hand and with these cords there was no sparking when the wires were touched by the operator or patient, or when the wires became crossed. Equally useful in those cases were high frequency current from the X-ray coil and d'Arsonval transformer. These were applied by means of electrodes consisting of vacuum tubes, some for external use over the hypogastrium and some for intrarectal use. The latter were insulated by a separate outer glass tube where it passed through the anus. The patient held a metallic handle connected directly with one pole of the d'Arsonval transformer and the vacuum electrode was connected with the other pole. When in operation 10,000 waves of violet and ultraviolet light passed down through the vacuum tube each minute and disappeared in the tissue of the patient. There was also a considerable amount of ozone liberated and carried in by the current. Then, too, a current of about 125 milliampères passed through the patient and an easily regulated amount of heat was produced at the point of contact of the glass electrode. The immediate effect of a single treatment was a very active elimination. The effect of a course of treatment has been observed in one case of well-marked tuberculosis of the prostate, which was reported at a recent meeting of the Medical Association of the Greater New York and in which several of our best genito-urinary surgeons, including Dr. L. Bolton Bangs, had regarded the diagnosis as positive. In this case the urine had been full of blood and pus and tubercle bacilli; and the patient had to urinate about 100 times a day. Now the urine contained practically no blood or pus, "only an occasional tubercle bacillus" (Fraser's analysis for two months in succession) and the patient was able to perform social duties requiring him to go five hours without urination and this without discomfort.

A Combined Catheter and Observation Cystoscope, with Demonstration on a Patient.—Dr. Follen Cabot said that the instrument he had just used in catheterizing the ureters of a patient in the adjoining room, was made along the lines of the Brenner and F. Tilden Brown instruments. Here, however, there was no separate chambers for the catheters in either the sheath or attached to the telescope. To support the catheters he had used the telescope and sheath in combination. This had never been attempted, so far as he knew, before. The advantage of this arrangement was, that he was enabled to accurately remove the cystoscope and leave the catheters in the ureters. Also the absence of the separate catheter chambers permitted him to easily clean the instrument. In addition, he had added to the end of the telescopic tube a short individual bridge to support the catheters while being introduced into the ureters. By this arrangement he had devised a curette; also a forceps for grasping any bodies in the bladder, and other instruments which could be made use of without change of tube. A good-sized urethral could be withdrawn from the bladder by this devise. In cases where catheterism was not indicated but an observation only required, the bridge attachment should be placed above the field of vision. It was thus out of the way.

Does Chronic Urethritis Cause Prostatic Hypertrophy?—Dr. E. L. Keyes, Jr., read this paper. He said that the theories of pathologists concerning the etiology of various diseases often aroused but mild interest on the part of the busy practitioner, but when etiological theory impinged upon therapeutic practice the interest of the clinician was stimulated. There were two theories concerning the causes of prostatic hypertrophy; the theory of testicular secretion with its train of castrations and vasectomies, which was a recent memory and the theory of prostatic inflammation which awaited practical confirmation. He gave a brief review of the theory up to the time of Ciechanowsky, who in 1896 published the first of a series of monographs and the conclusions of this conscientious and scientific series of pathological research were: (1) To pulverize through five chapters the remains of the theory of arterial atheroma; (2) to deny the existence of the prostatic adenoma; (3) to attribute the histological changes in both prostate and bladder to chronic inflammation of these organs; (4) to attribute prostatic atrophy and prostatic hypertrophy to similar inflammatory processes differently distributed. He quoted at length some of the experiments of this author from which after an exhaustive study of diseased prostates, Ciechanowsky inferred the very moderate and entirely justifiable conclusion that "The foundation for hypertrophy of the prostate gland and certain forms of prostatic atrophy consisted in chronic inflammatory processes, the etiological relation of which to virulent gonorrhea was not sufficiently proven at present. Yet the great frequency of gonorrhea in general, the great frequency of chronic prostatic inflammation due to it after all acute inflammation had subsided, and more particularly the conspicuous similarity of his observations to the pathological changes found in gonorrheal prostatitis, made it possible that such a relation existed. Whether gonorrhea really was the most frequent and important cause of hypertrophy of the prostate gland, would be the work of the future to decide." The fundamental facts discovered by Ciechanowsky had been verified by Greene and Brooks and by Crandon and were doubtless correct. The conclusion of all these observers was a very direct imputation upon the virtue of the hypertrophied prostate.

Until now the busy practitioner had had no reason to consider gravely the question whether prostatitis was the cause of prostatic hypertrophy, but since Ciechanowsky was so positive and since his demonstrations had been verified by competent, independent observers, it behooved the profession to set prima facie evidence aside and to criticise carefully the seeming freedom from inflammation exhibited by so many cases of hypertrophy of the prostate. Thus clinical evidence might be amassed either for or against the theory.

It happened that he had access to a set of case-books running back to the early sixties, and affording a wealth of clinical material recorded entirely without partisan spirit and detailing urethral histories for many years. From these he had been able to collect a number of histories bearing upon the subject in question; these he submitted with the belief

that they would aid in interpreting pathological facts. His first table of statistics comprised all the cases of which there was the remotest possibility that a previous prostatitis might have been the cause of prostatic hypertrophy. These cases might be divided into four classes: (1) Five cases of chronic urethritis, in which the prostate was not clinically hypertrophied. Three of these showed congestive symptoms of prostatic hypertrophy, but no residual urine, and at most were instances of possible beginning hypertrophy. In two others there was no symptom of hypertrophy, but the prostate was a little large in one and contained a small adenoma in the other. (2) Three cases with partial retention, in which the prostate was certainly not large so far as examination without operation could reveal. These three cases were assuredly instances of contracture of the bladder neck. (3) Three cases of deep stricture, so tight that prostatic symptoms were not revealed, but in which perineal section showed slight enlargement of the prostate. (4) Finally, there remained 15 cases of large prostate, which, with the three mentioned above made 18 cases of known prostatic hypertrophy after more or less prolonged chronic urethral inflammation. These 18 cases were found among 433 case histories of hypertrophied prostate. The number would doubtless have been larger had the cases been more closely questioned as regarded their early history. Their fewness enforces the fact that clinically, prostatic hypertrophy was not often associated with history or evidence of chronic urethritis. Among the 433 cases the degree of enlargement was noted in 192 or 16 per cent., and in the present series the degree of enlargment was noted in 12 cases, thus showing no deviation from the normal standard. The ages at which the symptoms of hypertrophy first manifested themselves were: In the 433 cases below forty-five years of age 3.2 per cent., while in the urethritis series, 5.5 per cent. began before the forty-fifth year. In the larger series 9.5 per cent. began below the fiftieth year, while in the urethritis series 16.6 per cent. began before that itme. In the larger series 14.1 per cent. began after the seventieth year, while in the urethritis series all began before that time. Thus the urethritis series showed prostatic hypertrophy at a slightly earlier age than did the others.

He had collected and tabulated 54 cases of chronic posterior urethritis from various causes, followed to an age varying from fifty to eighty-three years and not associated with prostatic hypertrophy. Among twenty cases of deep stricture, eight of chronic gonorrheal prostatitis and four of stone, the fact that the patients got entirely well under treatment, must be accepted as evidence that they were not suffering from any symptoms of prostatic hypertrophy; otherwise these would have appeared as the symptoms of the urethral or bladder condition were controlled. A third table comprised seven cases of stricture and fifteen of contracture of the neck of the bladder, these cases were all operated upon and the absence of prostatic hypertrophy proven by digital examination. These 54 cases, covering fairly every degree of duration and intensity to be looked for in chronic prostatitis, were sufficiently numerous to prove that chronic prostatitis did not inevitably lead to prostatic hypertrophy. Proceeding on a fair basis of comparisons he found that the percentage of hypertrophied prostates in the urethritis cases were not very different from the percentage in all cases. Thus at the fiftieth year, it stood 25 per cent. as compared to 19 per cent.; while, at the sixtieth year, it stood 33 per cent. as compared to 39 per cent., and; at the sixty-fifth and seventieth years, had fallen relatively lower.

He thought that the most surprising feature of these percentages was the fact that chronic urethritis seemed to have so little effect upon prostatic hypertrophy; if anything, very prolonged and active chronic prostatitis caused atrophy rather than hypertrophy. In 32 cases the prostatitis lasted more than ten years; of these, 75 per cent. showed hypertrophy, while 12.5 per cent. showed atrophy of the prostate, and not a single one of them had a very large prostate. On the other hand, among the 39 whose prostatitis lasted less than ten years, none showed atrophy, 28.2 per cent. showed enlargement, and two of these were very large. Additional confirmation of this presumption was afforded by the absence of hypertrophy in old cases of chronic retention cystitis due to locomotor-ataxia and other forms of bladder paralysis.

He considered it impractical to draw inferences from the effects of short gonorrheas in early life to the prostatic hypertrophies of later years. It was generally conceded that 75 or 80 per cent. of adult males have had gonorrhea in early life, and that fully 90 per cent. of these have posterior urethritis. Inasmuch as less than 20 per cent. of those who pass their fifty-fifth year have hypertrophy of the prostate, one certainly cannot infer any very direct connection between the two. Additional evidence against such a view was afforded by the fact that prostatic hypertrophy occurred with such uniformity at a definite period of life, which might be called the beginning of the decline. To assume that the prostatitis found by Ciechanowsky and his followers took from twenty to thirty years to produce its effect, was assuming too much for our credence until some direct evidence should be brought forth to support such a theory.

Dr. Keyes said that the following conclusions very fairly expressed his views: (1) Among 433 cases suffering from prostatism, only 18 showed clinical evidence of previous prostatitis. (2) These 18 presented no marked difference in point of the size of the prostate or of the beginning of the disease to differentiate them from the remaining 415. (3) Comparison of these 18 cases with 46 cases of chronic prostatitis without hypertrophy showed that the proportion of such cases suffering from prostatic hypertrophy varied little from the normal. (4) Prostatitis lasting more than ten years probably tended to produce prostatic hypertrophy. (5) Therefore, if it is true that hypertrophy of the prostate was pathologically referable to inflammation, the clinical data suggested that this inflammation was either early gonorrhea of relatively brief duration or some obscure sclerotic process associated with advancing years. (6) The late date at which prostatic hypertrophy began and its infrequency, compared with that of early gonorrhea, made it seem clinically most improbable that early gonorrhea was the cause.

Dr. L. Bolton Bangs said that there seemed to be a great deal of confusion regarding the etiology of prostatic hypertrophy and, after thinking about, reading about and observing these patients for a number of years, if he had any views at all he said he was still open to conviction and willing to be led and taught. He was not satisfied that inflammation was the cause, certainly not the only cause, of enlargement of the prostate. It seemed to him as a result of his own experience, that there was a large class of patients who had led sedentary lives, and that a

sedentary life had much to do with prostatic hypertrophies. He said there was another class of cases in which the hypertrophy began in early life, in some cases before the age of forty, but they were not in sufficient number to warrant any positive statements regarding their etiology. But he had been so struck by this clinical fact that he began to make records of the early sexual life of these individuals and he came to the conclusion that there was a large class of cases in which the prostatic hypertrophy might be attributed to sexual overindulgence of different kinds. There were other cases that seemed to be due to specific inflammation or gonnorrhea, but as other factors were to be considered, he was still somewhat confused regarding the true etiology of prostatic hypertrophy.

Dr. F. Tilden Brown said that practitioners must all admit that they are unable always to interpret the stories by the patients; there was a personal element about the individual which carried conviction or the reverse. He said he had been impressed with the fact that a large number of these patients gave no gonorrheal history. The enlargements of the prostates met with in comparatively early life, during the middle part of sexual activity and under forty years of age, presented to him a different type and did not appear to be a true fibrous enlargement, but practically a turgescence, due to sexual overindulgence. Whether this condition was a factor in subsequent hypertrophy was doubtful.

Dr. Robert H. Greene said, that he had no particular theory bubbling up in his own mind, but that eighteen years ago, being dissatisfied with the vagueness of our knowledge of the pathology of urethral disease, Dr. Ira Van Giesen showed some urethras obtained at autopsies, showing that the formation of true stricture was preceded by a granulomatous condition, and this was preceded in turn by an acute inflammation. These observations have been verified by many and he believed had been universally accepted the world over as being the true condition which existed in the urethra in connection with gonorrhea. Dr. Greene said, he was then interested later on, some six years ago, in finding out how many times the urethra in its deep portion was affected by gonorrhea. There were 216 cases at Bellevue which supplied the required histories. In a large number of cases of gonorrhea the prostatic urethra was invaded. He believed that this fact that had been demonstrated by many men and universally accounted to be so. In making that series of observations at that time he had had the prostate massaged and the secretions examined and through clinical observations he had become firmly convinced for the first time that inflammation played some part in the causation of prostatic hypertrophy, and he read a paper at that time before the Section in Genito-Urinary Surgery of the Academy, expressing those views. He felt convinced that gonorrhea invaded the prostate and set up there inflammatory conditions. Then his friend, Dr. B. Lapowski, told him of Ciechanowsky's work referred to and the reader obtained a copy of it. After reading this work carefully, he went to Dr. Harlow Brooks, the pathologist, and asked him to do some pathological work in connection with his studies and Dr. Brooks consented. In a short time he was able to collect 100 prostates and Dr. Brooks, according to agreement, made the required examinations and their deductions were published after being read before the American Medical Association meeting in St. Paul, Minn., under the title "Fallacy in the Treatment of Urethral Disease." In this article the work of Ciechanowski showing the relationship between inflammation and prostatic hypertrophy was confirmed for the first time. Then more material was gotten together and Dr. Greene and Brooks presented an article entitled "The Nature of Prostatic Hypertrophy." Since that time Craston of Boston had done exhaustive work, and one or two men in Europe, and they all came to the same conclusion. So far as he was concerned, since the articles were published, he did not believe that any pathologist had gone to work without coming to the same conclusions that Brooks, Cienchanowski, himself and other writers had arrived at. It was considered a scientific axiom not to look for anything beyond a simple explanation of a given phenomenon, if that was sufficient, and it apparently was in these cases. As a rule, he said, referring to the remarks made by the reader on the cutting of sections, before the time of the people he had mentioned, he understood that sections had not been made by the investigators through the prostatic urethral part of the enlargement, but through the hypertrophied mass itself; consequently they misled the starting point of the process. When Dr. Brooks made his sections through hypertrophied prostates, he made them through the prostatic urethral portion of the enlargement; they all show scar tissue formation, either a plugging up of the follicles in the floor of the prostatic urethra which later on caused them to swell up and made an enlargement, or scar tissue formation deep down between the follicles and which squeezed them together. To repeat, there was an enlargement caused by a dilatation and distention of the acini, their mouths in the floor of the prostatic urethra being plugged up by scar tissue; in other words, referring to his original question, there was a condition of scar tissue formation in the urethra of the kind that produced a stricture and which had gone into the prostatic urethra in islands and there, the scar tissue not being dense enough to form a stricture, it produced a certain change in the prostate through its action in dipping down between or in plugging up the mouth of the acini, causing either an atrophy or an hypertrophy of the prostate, or a mixed condition of the two. Dr. Keyes, he said, referred to chronic inflammatory processes and Dr. Greene said, he did not exactly understand just what he meant; if Dr. Keyes meant an active inflammation accompanied with the discharge of pus and immediately associated with prostatic hypertrophy that had nothing necessarily to do with the condition; if he meant a chronic granulomatous condition, neither did that have anything to do with it. This condition, Dr. Greene said, of scar tissue formation in the prostatic urethra, which caused later on prostatic hypertrophy or atrophy, was caused by something, probably some cause that had been in action for years. It was natural to suppose it to be most generally due to gonorrhea, as that is, as the reader stated, the common cause of scar tissue in the more anterior portions of the urethra. It might be due to irregular sexual life, possibly to lithiasis. Whatever formed scar tissue in the deep urethra in any given case might be the cause of prostatic hypertrophy.

Dr. Harlow Brooks said that the question might be asked "What is hypertrophy of the prostate?" Years ago it was considered a neoplastic growth. He did not think that any pathologist or clinician, who had carefully studied the condition, would now say that it was neoplastic in nature. Then, what was it? Microscopically it was shown to be due to a hyperplasia of the normal elements of the prostate with certain exceptions, and these exceptions were to be found in the muscular tissue, which did not hypertrophy. What was the cause of the hyperplasia, or hypertrophy? He said that we all know that inflammations chiefly caused the hyperplasia in other organs and he thought this to be the

simplest explanation of what was found in these cases. If sections were studied carefully and the clinical histories gone over with care, he said, one would come to the conclusion that the hypertrophy was inflammatory in nature, but he did not know what caused the inflammation; this was beyond the domain of the pathologist and in that of the clinical investigation, and he did not consider it. He had never stated that the cause was gonorrheal, but simply that it was inflammatory. He said, that he was much disappointed that Dr. Keyes did not give a classification of all the cases of prostatic hypertrophy, classifying those cases in which urethritis was not present but in which hypertrophy was present, as well as those where the urethritis was present but not the hypertrophy. Were the other cases of prostatic hypertrophy presenting inflammatory of syphilitic disease? These were the questions which interested him particularly, and which he thought more important than the relation of any specific type of inflammation to the causation of the condition.

Dr. John Van der Poel said, that it was his belief that in all cases where the posterior urethra was affected the prostate was also. Regarding gonorrhea being a causative factor of prostatic hypertrophy, the figures varied from one-sixth per cent. to 90 per cent. and Frank, of Berlin, gave 33 per cent. His own cases showed a percentage of 39.

Dr. Edward L. Keyes, Jr., closed the discussion by stating that no doubt almost all cases of prostatic hypertrophy had had gonorrhea; but he did not think that prostatic hypertrophy and stricture should be clinically coupled. Strictures came on within a reasonable length of time after an attack of gonorrhea and prostatic hypertrophy an unreasonable length of time after. He said he had collected these cases in order to learn whether prostatic hypertrophy was always caused by gonorrhea, or not; and, as a result of his investigations, he did not believe that it was.

BRITISH MEDICAL ASSOCIATION.

Seventy-second Annual Meeting, held at Oxford, England, July 26, 27, 28 and 29, 1904.

SECTION ON STATE MEDICINE.

(Continued from Page 618.)

Organization During Peace of Civil, Medical and Ambulance Aid.—Colonel Squire said: That in a war of any magnitude it is necessary to supplement the military organization for the care of the sick and wounded by civilian aid. Such aid is essentially of two kinds: (A) Surgeons, nurses, and orderlies, who are temporarily employed by the military authorities, receiving pay through the War Office. (B) Personnel and stores provided by voluntary subscription. Voluntary aid may be wasteful and embarassing or may be misapplied if no statement of probable requirements and no regulations for their employment have been previously laid down. Organization during peace is essential to ensure the best provision and to avoid unnecessary waste in war. Both classes of aid have occasionally been employed with our troops—for example, in the Crimea, Zululand, Egypt, and the Soudan—but without previous organization and with consequent waste. The recent war in South Africa found us for the first time with the germ of an organization, not yet sufficiently developed to meet the requirements of a big campaign, but which nevertheless was of considerable practical value.

Other local issues were discussed:

First Aid in the Tropics.—Colonel T. H. Hendley spoke of the needs of the Indian service. The needs here were great. In six of the largest British Provinces of India—namely, Bengal, the Central and United Provinces, Bombay, Madras, and the Punjab—with an aggregate population of about 209 millions and an area of about 707,000 square miles, in the year 1901 there were 1,991 dispensaries, or one in 355 square miles, or one each for over 100,000 persons, at each of which there were actually treated annually an average of about 10,500 new patients. For some of these provinces the figures for police, mission, and railway institutions are included; and, in others, particularly in Bengal, there are numerous private dispensaries belonging to more or less qualified persons, who practise according to the Western systems of medicine. There are also ex-dressers, compounders, and vaccinators, with many of the followers of the indigenous systems of medicine, of a greater or less degree of ignorance from the surgical point of view; nevertheless, the above statistics, and the deductions from them are sufficiently near the truth for my present purpose. The difficulty may, however, be looked at from another point of view, thus for example if each of the dispensaries were at the centre of an equally accessible district, the most remote of the inhabitants would still be over 10½ miles from a medical man. In the native State of Jeypore the utmost we could do with the available funds was to try to place each individual within 15 miles of such assistance; in Jodhpore the radius was 28 miles; in Jaisulmer there was only one hospital in the state, namely, at the capital, the area being 16,000 square miles.

If we reflect upon figures such as these, I think that we must admit that it is necessary to supplement the regular channels of medical aid, and that this can only be effected by giving such a moderate amount of training as can be acquired with ease and safety by persons of ordinary intelligence, as for example, the headmen of the villages of the vast agricultural population of India. This training must, of course, be of the most practical kind.

Dental Diseases in the Navy.—This was the title of an address by Norman G. Bennett.

Volunteer Brigade Medical Unit.—Brigade Surgeon P. B. Giles read a paper outlining his views as to the personnel of a brigade medical unit. Its duties and functions were about as follows: Duties: First, as the brigade medical unit is formed to place the second and third lines of medical assistance in the field under one command it is obvious that it will have to perform all the duties of a brigade bearer company and field hospital. Secondly, as the increase of establishment provides for one to be detailed to each squad of the various regimental stretcher sections during action they can be employed to teach first aid, bandaging, etc., and so help the regimental medical officer. Also, they should be detailed to supervise the removal of the regimental daily sick to the field hospital. Thirdly, the duties of ward orderlies and other hospital requirements. Fourthly, sanitation being, perhaps, the most important factor for the good health of booths in camp, non-commissioned officers and men should be detailed daily to supervise under the orders of the sanitary medical officer the general sanitary state of the camp, and see that the pioneers do their work efficiently and not in a perfunctory manner. Practically so much value does he place upon this supervision for the general health that he has for years carried

it out with the greatest benefit, and this coming winter course at the Volunteer Ambulance School of Instruction he has devoted a lecture on camp sanitation for the advanced class which consists of men who have obtained A.F.E. 596.

SECTION ON PATHOLOGY.

Immunity.—A full discussion on this topic was taken up by Drs. James Ritchie, William Bulloch, George Dreyer, Thorvald Madsen, C. J. Martin, H. Noguchi, M. A. Ruffer, A. E. Wright, and others. The chairman of the section, James Ritchie, opened the discussion, saying that at the present time the theories of Ehrlich, promulgated six years ago, still dominated the entire field. At present three points need to be carefully investigated. These were: (1) The natural immunity observed under certain circumstances to exist toward disease; (2) the artificially acquired immunity which came about in disease contracted under what may be called natural conditions of infection; and (3) the relation of these conditions to recovery in any case of infectious disease. It may be said that at present the direct attack on these problems has been largely overshadowed by the investigation of points which indirectly bear upon them, and especially by the urgent practical necessities which have arisen in consequence of demands made from the therapeutic side of medicine. It thus comes about that our reasonings chiefly are concerned with high degrees of immunity such as do not occur in nature and with artificial diseases whose phenomena elucidate matters under discussion. But how far, for instance, the knowledge accumulated regarding the mode of action of diphtheria antitoxin throws light on the recovery from an untreated attack of the disease, which may of course take place, is still an open question. He first asked what solid basis of fact have been arrived at regarding the process of immunization. In answer, he said, it is known that certain of the effects of some bacteria and most of the effects of other bacteria can be traced to poisons extremely soluble in simple saline solutions; that these poisons are of unknown composition; that they frequently have a selective action on special tissues; that when injected into the body of a susceptible animal they rapidly disappear from the circulating fluids of the body, probably in consequence of being fixed in susceptible cells; that they sometimes, as in the case of tetanus toxin, travel to the sensitive cells by special paths; that by immunization procedures an almost limitless degree of immunity can be developed in a sensitive animal; that such high degrees of immunity are associated with the appearance in the serum of an immune animal of substances capable of neutralizing these toxins; that the action of an antitoxin is specific—that is, it only neutralizes the toxin which stimulated its genesis; that the neutralization of toxin by antitoxin is of the nature of a chemical union; that in its union with antitoxin and also in its union with a susceptible cell, affinities in the toxin cell are saturated, which differ from the affinities to which the essentially toxic action is due. This last deduction is, however, only made from the fact that immunity can be produced by toxins so altered as to have partially or entirely lost their toxic action. To this may be added as an almost certain fact that the union of toxin and antitoxin is dissociable, and that the therapeutic effects of antitoxin, when acting in such a way as to detach toxin from cells to which it is fixed, is dependent on disassociation phenomena. Finally, it may be said, especially from what is known regarding tetanus toxin, that probably the eloboration of toxins may in some way favor the growth of the bacteria producing them, and this may explain why the neutralization of these toxins apparently converts a dangerous organism like the diphtheria bacillus into a relatively harmless saprophyte.

Toxins Specific.—It is to be recognized that the elaboration of soluble toxins is a quality of only certain bacteria, and that in the case of most bacteria, to put the fact in its most intelligible form, not merely the neutralization of poisons produced is necessary if the animal body is to escape destruction but the bacteria themselves must be actually killed. The killing of bacteria is associated with the presence in the serum of an immune animal of two substances, one thermolabile (complement) which naturally occurs in the serum of the animal species involved, and the other, thermostable (immune body), which either is present in normal serum in very small amount, or is altogether absent; that the degree of immunization which can be produced is much smaller than is the case with immunization against toxins; and that this is due to the fact that while an immune body can be formed in large quantity the act of immunization has much less effect on the production of complement. There is the further fact that we are only certain of the specificity of the immune body—that is, we know that immune body will only act deleteriously on the protoplasm which stimulated its genesis. A similar statement regarding complement cannot be made. It is practically certain that the reactions of these two substances on one another, and on the bacteria to be destroyed, are of a chemical nature analogous to the action of toxin on antitoxin, and also that the thermolabile substance has a chemical constitution closely allied to the constitution of toxin. While such results as those of Walker point strongly to the leucocytes being the source of complement, a review of the evidence adduced in favor of a coincident and correlated cytolysis occurring in every case where extracellular destruction of bacteria takes place during life is extremely unsatisfactory.

Toxins and Infections.—The knowledge with regard to the bacteria which by their presence give rise to infections differs in a very important detail from the knowledge of the bacteria acting by means of soluble toxins. In the case of the latter it is certain that it is the presence of the toxin in an animal's body which stimulates the production of antitoxin. In the case of the infective bacteria, on the other hand, it is not known what it is in the bacterial protoplasm which stimulates the production of substances, that is, immune body and complement, capable of killing that protoplasm. This is a point which merits attention here. The infective bacteria manifest their actions in the body by the production of inflammation and of fever. For the concept of fever, he thought it would be well if pathologists substituted the idea of a disturbance of metabolism of which fever may be one of the leading features. Though in the more recent treatments of the subject, such as those of Lazarus-Barlow and Ainley Walker, the metabolic aspects of fever are kept well in view, still in the minds of many the aspect of fever which leads to the explanation of the disturbances of heat regulation has rather a preponderant place attached to it. There is a tendency to look on fever too much in relation to normal heat regulation in the body, and as the other similar pathological processes to leave out of account possible pathological changes in function.

It is practically recognized by all that an increased burning up of the bodily tissues takes place, and it is this increased metabolism with its causes that from the pathological standpoint is really the important question, and it is probably from the consideration of this question in relation to infection that light may come on the true significance of fever as a whole. What the factors in the altered metabolism in fever are cannot be told, but just as in the group of effects which are called inflammation there are those which are the expression of injury done to tissues and those in which we have to recognize the activity of probably unaltered cells, so in fever it will be well to keep a mind open for the possibility that part of the increased metabolism may be the expression of work done by cells actively engaged in operating on the invading bacteria.

The fact that in broad outline the general effects produced in the body by different bacterial infections are similar might be explained in a variety of ways. The important fact is, that the poisonous substances present in infective bacteria do not diffuse out into an ordinary watery medium in which the bacteria may be present. Among the infective bacteria it is generally true that only from old cultures or from younger cultures which have been salted with ammonium sulphate can any poisons be obtained by filtration through porcelain. The most probable source of the poisons is the breaking up of the bacterial protoplasm which apparently frequently, both in cultures and in the living animals, follows on death. This is indicated by the observation of Pfeiffer. The poisons concerned are the so-called intracellular toxins, and by means of them the non-specific effects of the infective bacteria are due. When it is asked what is the relation of these toxins to the rise of immunity against infection, we are in considerable difficulty. And here again the early observations of Pfeiffer working with the cholera vibrio are of great importance, for this observer found that by appropriate dosage an immune animal might exhibit the capacity of killing all the bacteria injected into it and yet succumb to the effects of toxins which the death of the bacteria liberated from the bacterial protoplasm; in fact, might show earlier and greater symptoms of poisoning than the control unimmunized animal. Similar results have been more recently obtained by Kolle working with the plague bacillus, which probably has a somewhat different mode of exhibiting its pathogenic action.

Toxins and Antitoxins.—What is their chemical relationship? This is a pressing question. After reverting to a brief discussion regarding the historical aspects of the subject, he said that notwithstanding the different view points of Ehrlich, Sachs and Morgenroth on the one hand, and those of Madsen and Arrhenius on the other, the principles remain the same and the complexity of the processes have thus far defied analysis. The methods of physical chemistry were coming to the front, however, and he referred to the recent interesting results of Römer and Behring's laboratory, to the effect that when an electric current is passed through tetanus toxin in a U-tube and the moieties of toxin pipetted off from the kathode and anode poles, the examination of the moiety from the former shows that a rise in virulence has taken place. This is a very remarkable result, and if confirmed opens up a most important series of questions.

(To be Continued.)

BOOK REVIEW.

THE OPHTHALMIC YEAR-BOOK. A digest of the Literature of Ophthalmology, with Index of Publications for the year 1903. By EDWARD JACKSON, A.M., M.D., Emeritus Professor of Diseases of the Eye in the Philadelphia Polyclinic; President of the American Academy of Ophthalmology and Oto-Laryngology; Ophthalmologist to the Denver County Hospital, etc. The Herrick Book and Stationery Co., Denver.

THIS bids fair to be a welcome accession to the literature of ophthalmology. In 1872 Nagel began the publication of his well-known Jahresbericht, which has been an indispensable aid to all who would press their acquaintance with the ever-growing mass of printed matter beyond a cursory glance at the journals or books at hand.

When Nagel's Jahresbericht appeared, the original articles relating to the eye had reached annually the number of 600. Dr. Jackson states in his preface that the literature bearing on Ophthalmology is now growing by some 20,000 or 30,000 pages each year. From this comparison it may be seen how much greater the task now is, and how impossible it would be to make a modern Year-Book of Ophthalmology in any sense complete or satisfactory to all classes of readers. As an aid to research, it would be necessary to furnish at least the titles of all articles published, and abstracts of very many that would be of interest to comparatively few readers.

Nagel's Jahresbericht was the work of 20 collaborators, men whose names were among the best known of the time; while the modest volume under consideration is the result of the industry and critical acumen of one man. It is admirable as far as it goes, and fulfils the promises of the announcement—to provide a critical digest of the most important literature of the past year, judging it from the standpoint of the ophthalmic surgeon, and to furnish a list of the most important original communications appearing during the year.

The value of a work like this, the author states, depends, largely, upon its exclusion of all but the most appropriate matter. It is to be hoped that the scope of the work will enlarge from year to year, so that the principle of exclusion will be less prominent, for it is probable that only in this way can a year-book become of lasting value as a book of reference, or anything beyond the too familiar publishers' pot boilers and cumberers of the shelves.

The appearance of the book is excellent, and the few illustrations are satisfactory reproductions of the originals. The index by titles and authors' names is admirable.

BOOKS RECEIVED.

SERUMS, VACCINES AND TOXINES. By Dr. Wm. Cecil Bosanquet. 12mo, 344 pages. W. T. Keener & Co., Chicago.

ELECTRODIAGNOSIS AND ELECTROTHERAPEUTICS. By Dr. Toby Cohn. Translated by Dr. F. A. Scratchley. 12mo, 280 pages. Funk & Wagnalls Co., New York and London.

CONTRIBUTIONS FROM THE WM. PEPPER LABORATORY OF CLINICAL MEDICINE. Number 4. Alfred Stengel, Director. 8vo, 200 pages. Illustrated. University of Pennsylvania.

THEORY AND PRACTICE OF INFANT FEEDING, WITH NOTES ON DEVELOPMENT. By Dr. Henry Dwight Chapin. Second edition. 8vo, 342 pages. Illustrated. Wm. Wood & Co., New York.